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SPECIAL ARTICLE.

THE ANTI-TUBERCULOSIS MOVEMENT IN JAPAN.

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THE anti-tuberculosis movement in Japan is still in its infancy. Leaders have been exerting themselves along three lines: (1) Public enlightenment; (2) the establishing of hospitals and sanatoria for tuberculous patients; and (3) the legal control of measures making for the prevention and arrest of tuberculosis.

The Japan Health Association, consisting of 3,738 (1908) regular members and 205,272 (1908) local members, with forty-one local branch associations, devotes a column in each issue of its journal to the enlightening of the public concerning tuberculosis. Public lectures also have been held under the auspices of the Association, not only in cities, but also in towns and villages. These lectures are generally illustrated with lantern-slides.

Dr. G. Shibayama was the first to publish three popular works upon the nature and treatment of tuberculosis. At present many works dealing with this scourge are being widely circulated.

Japan has at present only a few hospitals and sanatoria solely devoted to the care of tuberculous patients. One of the most up-to-date and best known is Professor Kitasato's Yo-jo-en. This institution

is situated at Shirokane, Tokyo. Here most of the patients are given tuberculin treatment. The number of cases reported as recovered amounts to 30 per cent., while those in whom a decrease of the bacilli in the sputum was noticed numbered 40 per cent. Compared with the results obtained at sanatoria in Europe and America, our figures fall short of our expectations. The difference may be accounted for partly from the nature of the patients. Apparently in the West patients come under sanatoria or hospital treatment in an earlier stage than they do here. If our incipient and walking cases be brought into the estimate, the percentage may show a higher standard, approximating to, if not equalling, those of the Occidental institutions. Besides Yo-jo-en there are few other sanatoria for consumptives in Japan. Such as exist are established on a contracted scale, hardly admitting of any adequate description. The Japanese Imperial Government is now awake to the urgent need of establishing proper sanatoria, and it will not be long before Japan should have an ample number of them available for its citizens.

Regulations enacted in February, 1904, require the provision of spittoons in all public institutions, such as public baths and hospitals. The text of these regulations is given in the accompanying footnote.¹

¹ The following are the Regulations for the Prevention of Pulmonary Tuberculosis issued by the Japanese Home Department, Regulations No. 1 of the year 1904 :

ART. I.—A certain number of spittoons shall be provided in all schools, hospitals, factories, amusement halls, hotels, and all other places designated by the local Governor. In case the aforesaid spittoons are deemed unsuitable or their number is insufficient, the police authorities may order them to be changed or their number increased within a specified period of time. To prevent the drying and dissemination of the contents of the aforesaid spittoons, a small quantity of liquid disinfectant or water shall be put into each such spittoon; and the contents must never be thrown away unless they are disinfected according to the method stated in Art. VI.

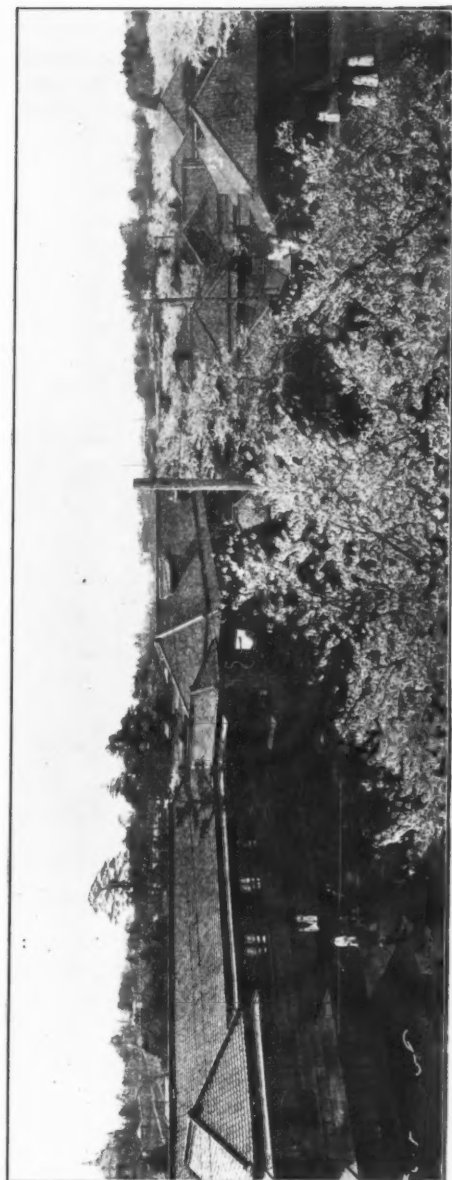
ART. II.—In the places mentioned in the preceding article, no person is allowed to spit phlegm and saliva anywhere except into the spittoons provided for the purpose.

ART. III.—Hotels situated at mineral springs, watering-places, and health-resorts, which are designated by the local Governor, shall observe the following clauses : 1. That the bed-clothes used for guests are covered with white sheets. 2. That the aforesaid white sheets and bathing clothes provided for guests are washed every time the guests are changed. 3. That whenever a guest is known to be a consumptive patient, either avowed or suspected, the room where he or she has been is not to be used for another guest unless such room is disinfected. 4. That any article used by the aforesaid patient is not allowed to be used by any other person unless such article is disinfected.

ART. IV.—Hospitals shall observe the following clauses : 1. That a patient with pulmonary tuberculosis is not to be placed with other patients in the same room. 2. That the sick-room used for patients with pulmonary tuberculosis is not to be used for other patients unless such room is disinfected. 3. That any article infected with tuberculosis, or suspected of being so infected, must be disinfected before such article is used by another person.

ART. V.—The heads of prisons, Government or public or private schools, hospitals, poor-houses, orphanages, factories, Government or private railway-stations and railway-cars, shall take proper measures according to the provisions of these Regulations.

ART. VI.—The method of disinfection shall be as provided in the Home Department Regulation No. 13 of 1907; and for the disinfection of phlegm and saliva,



YO-JO-EN SANATORIUM.

Statistics show an increasing prevalence of tuberculosis in Japan. There may be many causes for this, but the following four are undoubtedly the most important: In the first place, cases of infantile tuberculosis have suddenly increased. In the foregoing years they were only rarely met with. The fact is confirmed by the pediatricists. Secondly, in proportion as the facilities of communication increase, the spread of the chronic infectious diseases increase—due, doubtless, to the more frequent contact of the tuberculous sick with healthy subjects. Thirdly, the development of factories and manufacturing establishments on a large scale, after the system pursued by the Western manufacturers, has served to produce and spread tuberculous disease among the working classes. In former days Japanese manufacture was conducted in a small factory, or rather in work-rooms, where several tradesmen carried out their work. The house is so constructed as to admit a free ventilation and lighting. Entering the house with foot-gears or spitting on the floor is never known to the Japanese. But the bringing together of a large number of labourers in one establishment necessitated the adoption of a Western style of building, in which the workers led an unaccustomed form of living. The neglect of proper sanitary precautions must have played a predominating part in the spread of tuberculous disease. Evidences have been collected among the factory girls employed in cotton-mills. Fourthly, the introduction of modern methods and manners of civilization, the unequal distribution of wealth, and the hard and strenuous struggle for earning a living, should also be enumerated among the causes that brought about this unwelcome spread of tuberculosis.

carbolic-water containing solid carbolic acid 5 per cent., hydrochloric acid 1 per cent., and water 94 per cent.) shall be used.

ART. VII.—Any person who does not provide spittoons, in defiance of the first paragraph of Art. I., or does not carry out the order of the police authorities within a specified period of time, or violates the third paragraph of the same article, or Article III., shall be liable to a fine not exceeding ten yen.

ART. VIII.—Any person who violates Art. II. shall be liable to a penalty not exceeding twenty-five yen.

ART. IX.—Any person who violates Art. IV. shall be liable to a penalty not exceeding twenty-five yen.

The following Supplementary Provisions have now been adopted:

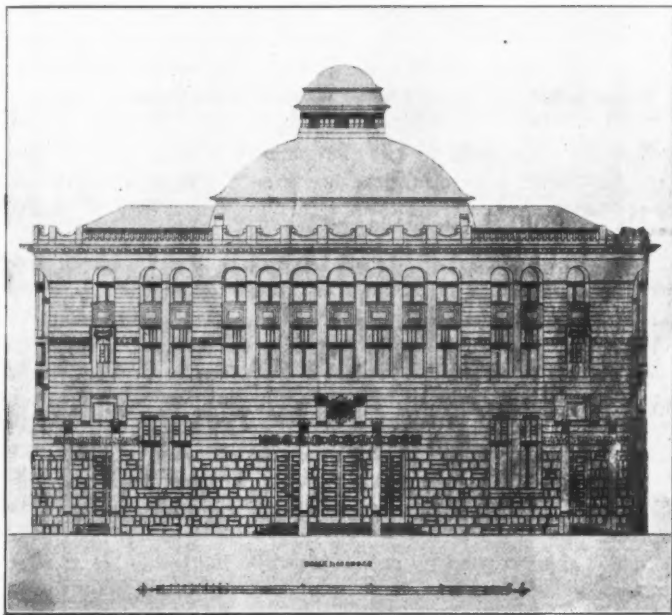
ART. X.—The penalties of Arts. VII. and IX. shall be imposed on the head or the manager, though any person employed by him or in any way helping him violates the present Regulations. In case the representative of a juridical person, or anyone employed by or in any way helping such juridical person, violates the present Regulations concerning the business of such juridical person, the penalties provided in the present Regulations shall be imposed on such juridical person. In case a juridical person is to be punished, the representative of such juridical person shall be the accused party.

ART. XI.—The provisions of the present Regulations do not prevent necessary provisions being made for the prevention of pulmonary tuberculosis by the orders of the local government.

ART. XII.—In Tokyo Prefecture the official functions of the local Governor shall be exercised by the Metropolitan Police Inspector-General.

ART. XIII.—The present Regulations shall be enforced on and after the 1st day of April of 1904.

Why has Japan seemed to care so little for the fight against tuberculosis? The reason is this: The increased prevalence of tuberculosis has been so gradual and silent that even the most vigilant sanitary authorities have considered anti-tuberculosis measures to be less important than precautions against the acute forms of infectious diseases, such as plague, smallpox, cholera, dysentery, and the like. These diseases in the East often make sad havoc among the population, and ravage many even in a single day.



HEADQUARTERS OF THE JAPAN HEALTH ASSOCIATION.

In conclusion, it may be said that the anti-tuberculosis campaign in Japan is steadily proceeding. We are striving for the same goal as are European and American peoples. Japan had no Anti-Tuberculosis Society until 1908, when Koch visited her shores. On the evening when over one thousand physicians met together to receive Koch, a resolution was unanimously passed to form an Anti-Tuberculosis Society in Japan in commemoration of the occasion. A committee of organization was appointed, consisting of ten leading physicians. Before long it is to be hoped that the anti-tuberculosis campaign will be actively conducted through the whole Empire of Japan.

ORIGINAL PAPERS.

THE ASPIRATION AND INJECTION OF
TUBERCULOUS ABSCESSES OF BONY
ORIGIN.

By H. J. GAUVAIN,

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TUBERCULOUS abscesses of bony origin may at some time or other in their evolution require surgical interference. Surgical interference is not always necessary, and in a certain proportion of cases, if adequate mechanical means of immobilizing the causal lesion be employed, the abscess will cease its evolution and become spontaneously absorbed. This, however, is by no means always the case, and interference of some kind then becomes indispensable if spontaneous bursting of the abscess is to be avoided. Probably all surgeons have at some time or other attempted to deal with tuberculous abscesses by means of aspiration, but few in this country persist in this method of treatment. This is the more to be deplored because no means at our disposal are so efficacious in dealing with this complication of bony tuberculous disease, provided proper technique be adopted, and simultaneous rigorous immobilization enforced.

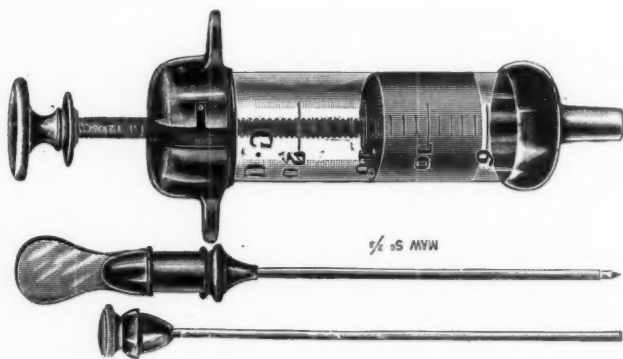
In this brief paper I propose to describe the technique of aspiration and the indications for the employment of certain fluids to assist in the treatment of the abscess, and designed to hasten its cure. It is desirable for a moment to consider the origin of a tuberculous abscess. By the researches of many observers, the nature of its evolution has been made tolerably clear. Starting from its primary centre in the osseous tissue, the abscess gradually spreads, infecting adjacent regions, the least resistant being the most affected, and in that direction where there is least resistance it advances with the greatest rapidity. Fibrous tissue offers a bar to its advance which is in close proportion to the strength and density of the tissue on the one hand, and the virulence of the infection and the tension in the abscess on the other.

The muscular aponeuroses, the more powerful ligaments about the joints, and the periosteum investing the bone therefore hinder

greatly its progress, while muscular tissue and the loose investing connective tissue in the intermuscular planes can offer little resistance. A deep-seated abscess is hindered at times by the natural resistance of strong muscular aponeuroses or still more powerful ligaments; but sooner or later, unless checked in its progress, it breaks down these barriers, reaches the skin, and eventually comes through the surface. The spread of the tuberculous lesion has not been inaptly compared to the advance of a neoplasm; and acting upon this tuberculome theory, a rational treatment was evolved, by which attempts were made to remove entirely, not only the abscess, but also the causal lesion in the bone. This treatment, adopted extensively some years ago, subjected the patients upon whom it was attempted to operations often of a most severe and extensive character. Even when successful, the patient was often exposed to grave risk—first from shock and collapse, and later from secondary infection, either from tuberculous or from other organisms. In addition, these extensive operations were accompanied by extreme mutilation, which resulted in most deplorable crippling and atrophy, which no ingenuity could overcome. Especially was this the case in resection of the hip-joint for tuberculous disease. The effects of this method of treatment—which, though rational, can only be undertaken satisfactorily when the lesion is a small one and easily accessible—gradually convinced surgeons that less radical measures must be adopted, and incision of the abscess is now more commonly employed and the evacuation of its contents alone undertaken when the lesion is extensive. Incision of a tuberculous abscess is by no means a satisfactory operation, and for this reason: that this incision goes through those very barriers which it should be our every effort to preserve and strengthen; and these, even if repaired afterwards with all possible skill, tend often to break down, and lead to subsequent sinus formation. The formation of a sinus is almost always followed by secondary infection, not only of the sinus itself, but also of the focus of origin of the disease, and when this focus is an extensive bony one, as in cases of hip disease and spinal caries, the consequences which ensue are often disastrous. Profuse suppuration and fever exhaust the patient, and may themselves cause death, while a general infection is not uncommon. The danger of a tuberculous abscess does not lie in its specific infection: closed, such an abscess is harmless; opened, the prognosis becomes serious. Long before the true nature of a tuberculous lesion was understood, the serious results of the spontaneous opening of the abscess were recognized.

It is my object to describe how these complications of surgical tuberculous affections may be avoided by the employment of aspiration with due regard to technique. Probably the reason why

aspiration has found so little favour in this country is : (1) Because due precautions in its employment have often not been observed ; (2) it has often been found impossible to empty the abscess by this means of the pus it contained ; (3) it is not sufficiently realized that not only must the abscess be attacked, but the lesion which causes it must be simultaneously rigorously treated. The importance of treatment of the causal lesion cannot be over-estimated. General measures should be enforced ; the patient's health improved in every way ; life in the open air, in the stimulating breezes of the country or seaside, should be enjoined. Good, plain, attractive food, capable of easy assimilation, and tonic drugs should be prescribed. And, most important of all, absolute rest and immobilization must be



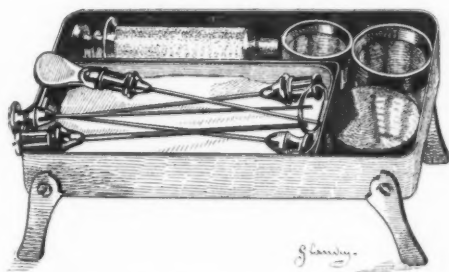
ASPIRATING SYRINGE, TROCAR IN CANNULA AND BLUNT-POINTED PROBE.¹

enforced. This arrests the spread of the inflammatory process, and, if properly undertaken, prevents the onset of deformity or corrects deformity already existing. By this means the patient, as Casteigne has observed, makes the whole fight against the bacillus. It remains now only to assist the patient, by relieving him of the pus which has collected and which he cannot reabsorb. In aspirating a tuberculous abscess, it should be our endeavour to pass the trocar through as deep a layer of healthy tissue as possible before the abscess is tapped. Furthermore, the abscess cavity should be tapped at the highest possible point, and due regard should be paid to the direction in which the abscess is spreading—*e.g.*, in the case of an abscess situated in the region of the hip-joint; and which will probably tend to track downwards towards the knee, it would be desirable to aspirate on the cephalic side, because if after the first aspiration the abscess

¹ The block of above illustration has been kindly lent by Messrs. Maw, Son and Sons, Aldersgate Street, E.C.

re-collects and extends still farther, it itself might in time involve that portion of the tissue which was pierced by the trocar, and that weakened portion would become the site of a sinus. Such precautions as these, if obvious, are rarely taken into consideration, and for this reason failure is common on the part of those who practise aspiration.

The accompanying illustration demonstrates the form of aspiration syringe which I commonly employ, and which is adapted for the requirements for which it is designed. The cannula is long and narrow—long, so that as much healthy tissue as possible be traversed before the abscess is reached, and of small lumen, so that the track it makes shall be as small as practicable. As great precautions should



ASPIRATING INSTRUMENTS COMPLETE IN CASE.

be taken in preparing the skin of the patient for aspiration as would be employed in a general operation, and the same precautions should be taken in preparing the hands of the surgeon and the instruments to be employed. The apparent simplicity of an aspiration sometimes induces those who practise this operation to neglect these essential precautions, which are now first principles in surgical treatment. No general anæsthetic is necessary for the patient, but the skin having been carefully prepared, the course of the abscess defined, and its relation to neighbouring vessels and viscera ascertained, the skin where the puncture is to be made is first frozen with ethyl chloride. A sharp movement of the trocar perforates the skin, and then, with a slow and steady pressure, the tissue between the skin and the abscess is traversed, and the abscess cavity is entered. At once there is a sensation of freedom at the end of the trocar, and if the trocar be now removed, some pus will probably escape through the cannula. With the syringe more pus is removed; but I would here point out a fact which seems hardly recognized by those who have not had much experience in the aspiration of tuberculous abscesses. A tuberculous abscess is commonly not enclosed in a simple cavity. The cavity

of the abscess is frequently multilocular, and the pus may be quite easily removed from a loculus the walls of which then approximate, while the pus which may exist in quantity in neighbouring chambers cannot be extracted at all. A little gentle manipulation will often make this pus accessible to the cannula, and it can then be withdrawn; but it is, of course, desirable not to perform undue manipulation, as obvious dangers may arise by injury to neighbouring organs. If there is any difficulty in withdrawing the pus in spite of gentle manipulation, it is generally desirable to remove the cannula and re-aspirate, either at once or subsequently.

An abscess may be permanently emptied after one single aspiration, but this is uncommon, and much more frequently two or three or more aspirations are required before the abscess is finally emptied.

Simple aspiration is sometimes not sufficient, and it is then that so-called modifying fluids may be usefully employed. Of these modifying fluids I will consider briefly the three most important solutions I employ, and which I have found most useful.

(1) Sterilized iodoform, 10 per cent. in sulphuric ether.

(2) Sterilized iodoform in oily solution of the following formula :

Iodoform	...	...	...	10 grammes.
Ether	...	...	...	5 grammes.
Guaiacol	|	...	...	2 grammes.
Creosote	|	...	...	2 grammes.
Sterilized olive oil	...	...	...	100 c.c.

(3)

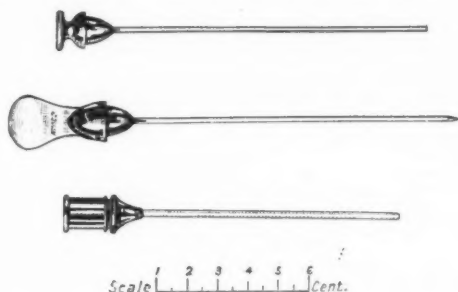
Thymol	...	...	...	1 part.
Camphor	...	...	...	2 parts.
Sulphuric ether	...	...	...	3 parts.

How do these Modifying Fluids act ?

"After the discovery of the bacillus of Koch, it was thought that the efficacy of the modifying fluids depended on their bactericidal powers, and the question of which was the best to employ resolved itself into ascertaining which was the most powerful antiseptic. In reality, however, there is no complete parallelism between the bactericidal action of an antiseptic *in vitro* and its efficacy when in an abscess cavity. As an example of this, iodoform, one of the most powerful modifying agents, is one of the feeblest antiseptics. Its selective action on Koch's bacillus cannot be doubted. Nevertheless, *in vitro* its retarding action on the development of the tubercle bacillus is inconsiderable. It appears, therefore, logical not to ascribe the chief merit of these modifying fluids to their antiseptic action. Anatomically, it is difficult to understand how this action could be efficaciously exercised in abscess cavities which are frequently multiple, multilocular, and often connected with the primary lesion by a long sinuous track. So that, without denying some value to the bactericidal action of

these substances, it is necessary to seek elsewhere for a full explanation of their efficacy.

If a tuberculous abscess be opened, and to its walls be applied one of these agents (iodoform, naphthol, thymol, camphor, or others having similar action), it is possible to follow with one's eyes the changes which take place. The appearance of the tissues visibly changes; the caseous masses appear to become dissolved, and in their place is seen a red injected surface, covered with small healthy granulations. True cleansing of the abscess cavity is produced—one might call it a chemical curetting. And as the granulations become more marked and the fibrinous walls become denser and thicker, the secretions become less abundant. Cytological and chemical examination of the pus before and after injection of the modifying fluids furnishes



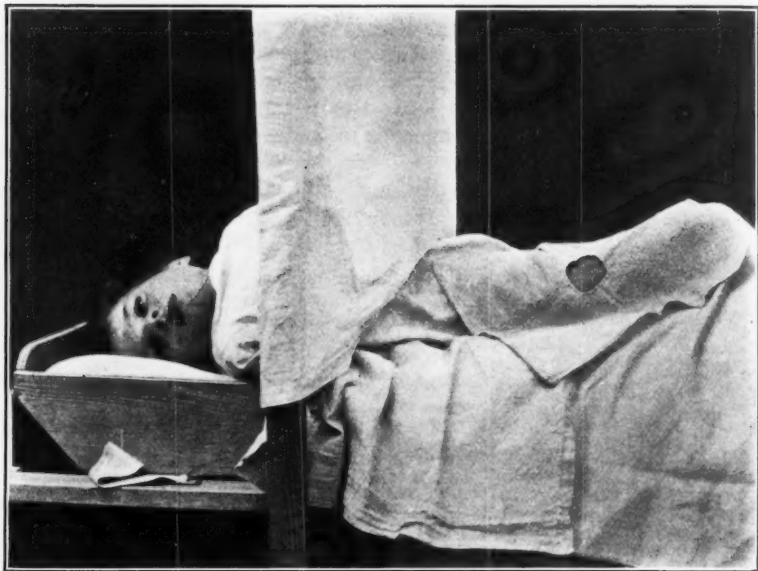
TROCAR, CANNULA, AND BLUNT-POINTED PROBE FOR CLEARING LUMEN OF CANNULA.

the key for the explanation of the action which they produce. The cellular condition of the pus is altered, and the changes may be summed up as follows:

After the injection, the pus soon becomes full of polynuclear leucocytes. It contains a well-defined fibrinous network, entangled in the meshes of which are cellular debris and red blood-corpuscles. In other words, it contains the elements associated with inflammatory reaction, and when camphorated thymol is employed, cellular necrosis is the prevailing phenomenon. The result, therefore, is that this aseptic irritation provokes active dilatation, accompanied with diapedesis of white corpuscles, fibrinous exudation, proliferation of the fixed cells, and, with thymol, destruction and necrosis of the caseous masses. A chronic abscess, then, becomes transformed into an acute but aseptic abscess.

The researches of Coyon and Fiessenger have offered also a chemical explanation of the phenomena recorded. In the pus of an

ordinary abscess they have shown that there exists a proteolytic ferment analogous to the tryptic ferment of the pancreas, which has the power to digest coagulated albumins and to transform them into peptones and amido acids. This ferment is liberated in the destruction of the polymorphonuclear leucocytes. It does not exist in the pus of an ordinary tuberculous abscess, and this is explained by the absence of polymorphonuclears in these. The injection of the modi-



PATIENT PREPARED FOR ASPIRATION; THE SCREEN HIDES THE PATIENT FROM THE SURGEON.

(Reproduced by kind permission of the Editor of the *Lancet*.)

ifying fluid is the cause of their appearance. Clinical experience supports the results obtained by this histological and chemical research. The injection of modifying fluids is always followed by the phenomena of reaction, more or less marked, but always constant."¹

Indications for use of Modifying Fluids and Mode of Employment.

When, after repeated aspirations, pus re-collects in undiminished volume in the abscess cavity, the walls of the cavity do not involute, and, indeed, when sometimes the cavity appears to be actually in-

¹ Calvé and Gauvain: "Treatment of Tuberculous Abscesses of Bony Origin by Conservative Methods," *Lancet*, March 5, 1910.

creasing in size, simple aspiration is obviously inefficient. In such cases the employment of iodoform ether is usually indicated by reason of its drying and sclerosing properties. After aspiration, and while the cannula still remains in the abscess cavity, from 5 to 10 c.c. of 10 per cent. iodoform ether should be gently injected into the abscess cavity. After the injection, the syringe should still remain in connection with the cannula, and gradually the piston will be seen rising in the barrel from the pressure of the volatilizing ether in the abscess cavity. The syringe must now be removed, and if the lumen of the cannula is clear, the ether will escape in gaseous form, hissing. Great care should be taken that all the ether escapes in this way from the abscess cavity, the iodoform alone remaining as a fine precipitate on the walls. In this way those mechanical accidents which were at one time reported after the use of iodoform ether can be safely avoided, and the patient saved from pain due to excessive distension of the abscess cavity. Iodoform poisoning, when only small quantities of iodoform in sterile form is employed, does not occur.

After the employment of iodoform ether in the manner explained, the pus, though usually re-forming, collects in smaller quantity and in altered form. It may be again aspirated and further injections employed. The walls of the abscess will be found at each successive aspiration to be thicker and more sclerosed, and ultimately a form of retraction takes place in these walls, leading eventually not merely to the emptying of the abscess, but to its complete disappearance. Fibrous tissue replaces it, and this in turn gets less in quantity, and at length itself vanishes.

When the pus in the abscess cavity is caseous, iodoform ether should not be employed as the modifying fluid. Here, indeed, it may be dangerous, for caseous pus may block the cannula after the injection, and those mechanical accidents already alluded to occur. In these cases the injection of the thymol-camphor-ether solution is usually indicated, in doses not exceeding 2 to 3 c.c. in the first instance. Care must be taken in the employment of this solution, as it is toxic; but if reasonable precautions are observed, and the mixture injected right into the abscess, no ill-effects are likely to be observed. The chronic abscess becomes converted into an acute but aseptic abscess. Polymorphonuclear leucocytes appear; these disintegrate, liberate ferments which digest the coagulated pus, and within forty-eight hours after the injection a fluid, glutinous, chocolate-coloured pus may usually be withdrawn if the abscess be re-aspirated.

In cases where the abscess is increasing in size the pus is caseous, the tissues around are infiltrated, and there is evidence of a want of that reaction and resistance which it should be our aim to

encourage, the compound iodoform emulsion suggested may be conveniently used. Here, however, deficient immobilization is probably the fault, and this should be simultaneously rectified.

By the careful employment of these modifying fluids, accompanied by adequate general and local treatment, tuberculous abscesses may usually be safely and certainly cured. Cure without sinus formation should occur in from 95 to 98 per cent. of cases treated. No means yet devised will so safely, speedily, and certainly cure a tuberculous abscess of bony origin.

THE ANTI-TUBERCULOSIS CONFERENCE AND EXHIBITION AT EDINBURGH.

By W. LESLIE LYALL,

M.B., M.R.C.P.E.,

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Joint Secretary of the Conference.

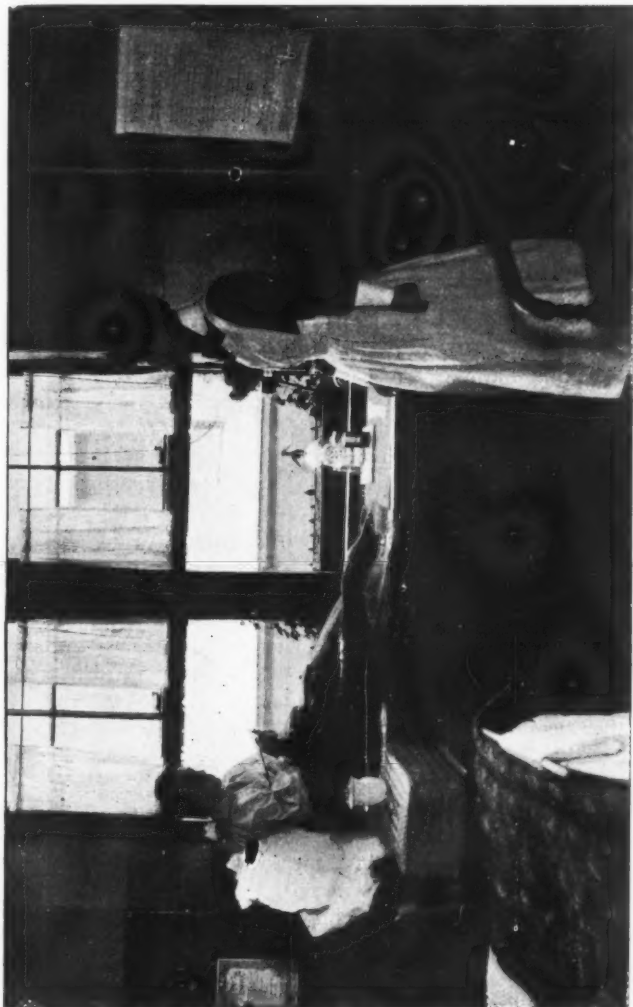
THIS year the National Association for the Prevention of Consumption and other forms of Tuberculosis awoke to a wider idea of its mission and of its national duty, in determining to hold its annual meeting outside London.

There was a peculiar fitness that, accepting the invitation of the Committee of the Royal Victoria Hospital, the Association should meet in Edinburgh. The advantage was bound to be mutual, and not only has public interest in the anti-tuberculosis crusade been quickened throughout Scotland, but the Association itself cannot fail to have derived inspiration and needed stimulus from its sojourn in the city which has been in the forefront of the campaign for nigh a quarter of a century.

Under the leadership of Dr. Philip, Edinburgh may be said to have actually started the campaign, by the creation of what is now universally known as the Edinburgh System. This summer saw the completion of that system by the inauguration of the Royal Victoria Farm Colony, and the visit of the Association could not have fallen on a more appropriate time.

The Local Committee was determined that the meeting should be a memorable one, and arranged that a Conference should be held for the discussion of various subjects relating to tuberculosis, and that a Tuberculosis Exhibition should be open to the public during the week of the Congress. This exhibition was started by the Association a year ago, and since then has visited several of the larger towns in

England, doing admirable educational and propagandist work, but this was its first visit to Scotland. The Exhibition of the National



THE HOME OF A CONSUMPTIVE UNDER THE DIRECTION OF THE DISPENSARY NURSE.

Association was much enriched by an extensive scientific and literary department brought together in Edinburgh.

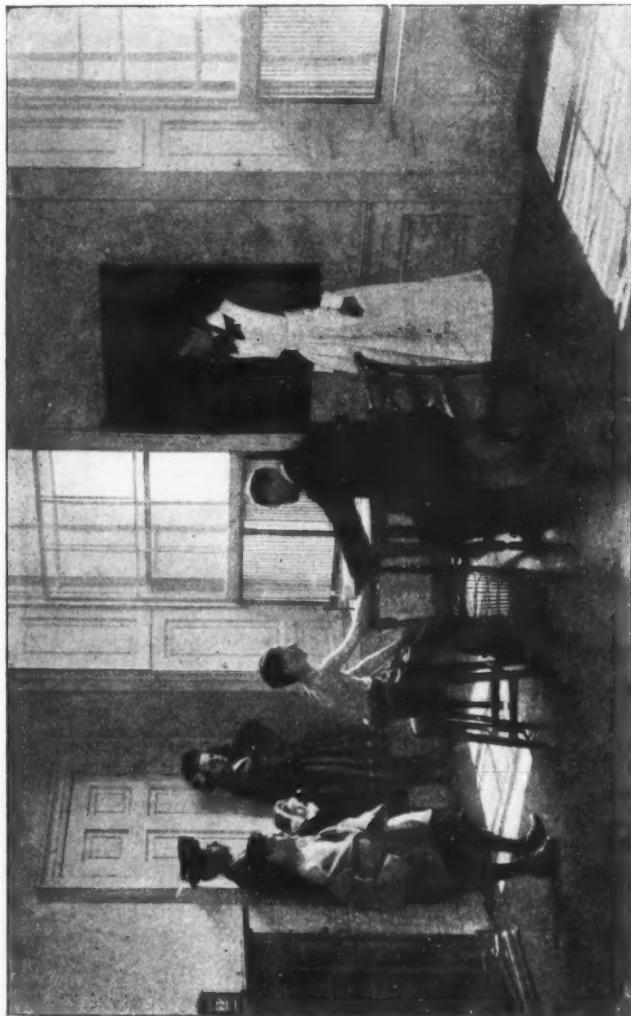
In furtherance of their plans, the Committee sought and obtained

the co-operation of medical and sanitary authorities throughout the country, as well as the interest and help of the members of the profession, with the result that the Conference from first to last went with a verve and vigour which was profoundly gratifying to the organisers. The Association was shown in a most convincing fashion, by means of the programme prepared, what an enormous educational power it possesses if it only exerts itself to use it, and the response of the public to the programme indicates very plainly that the time is ripe, and that the people eagerly await the guidance, which should come from a body with the prestige of the Association. Apart from the discussions of the Conference itself, the programme included: (1) A number of lectures delivered by leading members of the Association to teachers and senior scholars at various public schools; (2) a series of popular evening lectures given by recognized authorities on the subject of tuberculosis; (3) visits to different institutions, such as the Royal Victoria Dispensary, the Royal Victoria Hospital, the Royal Victoria Farm Colony, as well as to the City Hospital at Colinton Mains, where special wards are set apart for the segregation and treatment of advanced cases of pulmonary phthisis; (4) the Tuberculosis Exhibition. This last attracted a very great amount of public attention, over 20,000 people having visited it during its stay in the city.

The Organising Committee was well advised in directing discussion upon certain definite aspects of the tuberculosis problem, and the selection of the subjects was admitted to cover a very wide and fruitful field. They were equally fortunate in the speakers who dealt with the different subjects—men of eminence, well able to direct both thought and discussion upon profitable lines. The outstanding feature of all the meetings for debate was the large attendance—at none of them were there less than 300 or 400 members and delegates present. One felt that the interest throughout was of the keenest, and all the speakers were followed with the greatest attention.

The subject for the opening discussion was "The Avenues of Infection." All the speakers dwelt with special emphasis upon the necessity and enormous value of clinical work and observation in the elucidation of this problem. The general trend of opinion was that post-natal infection, and that mainly through the respiratory tract, was by far the commonest occurrence. Much support was given to the view that the whole mucous membrane, from nostril to alveolus and from the lips to the anal orifice, was vulnerable, but that certain areas, such as the tonsillary region, were especially so. Several speakers referred to the slow progressive nature of the infection, and to the effect of the ebb and flow of the lymph circulation in the spread of the disease, also to the general frequency of aero-lympho-

genous infection. Man generally infected man, and bovine infection was admitted to be relatively rare. A note of caution was struck by



THE ROYAL VICTORIA DISPENSARY: "MARCH PAST" OF A HOUSEHOLD, IN ORDER TO DETECT EARLY CASES.

many speakers as to accepting deductions from experiments on animals, in which a maximum dose was generally administered in a short period.

The discussion on "Administrative Control of Tuberculosis and Preventive Measures" attracted perhaps the largest audience. It was introduced by Dr. Hermann M. Biggs, of New York. At the outset, he spoke in most appreciative terms of the Edinburgh Scheme, which he referred to as the most complete in existence. He was emphatic in the necessity for thorough organisation and the fullest co-ordination, and dealt in detail with the specific functions of the dispensary, sanatorium, working colony, and hospital for advanced cases. Comparing Edinburgh and New York, he said they were the two cities in which a co-ordinated scheme for dealing with the tuberculosis problem was earliest elaborated—"this dispensary (Royal Victoria Dispensary) indeed may be said to have initiated the movement." In Edinburgh the work had from the first been voluntary, aided only within the last few years by the co-operation of the Sanitary Authorities, whereas in New York the initiation had come from the Sanitary Authorities. In other ways the working schemes of the two cities closely resembled each other.

Dr. Leslie Mackenzie, Medical Member of the Local Government Board of Scotland, also mentioned the Edinburgh System in most laudatory terms, and stated that the Local Government Board had accepted it as a model in its recommendations to local authorities. The Board hoped to see the gradual adoption in each district of the scheme which had worked so successfully in Edinburgh. He said that the Local Government Board already possessed ample powers for dealing with tuberculosis, and that, so far as Scotland was concerned, no further legislation was necessary. Dr. Stafford, C.B., of the Irish Local Government Board, dwelt likewise on the significance of such a co-ordinated system. The Medical Officers of Health for Edinburgh, Glasgow, and Sheffield, expressed the utmost satisfaction with the smooth working of compulsory notification of phthisis, and urged its adoption in areas where it did not already exist. Over 50 per cent. of the population of Scotland already came under this measure.

"The Incidence of Tuberculosis in Childhood" proved a most interesting discussion. With regard to the frequency of tuberculosis in children, two rather divergent views were taken. A paper by Dr. Hamburger, of Vienna, was read, and supported by Dr. Philip. In this the advanced position of extreme frequency in childhood was supported. Dr. Hamburger maintained, as a result of both clinical and post-mortem observations, that nearly all persons over fourteen years of age in Vienna were already tuberculous. Tuberculosis in childhood was usually slow in advance and comparatively harmless, but its frequency increased with age, though the morbidity of the infection was less. The older the individual was at the date of first

infection, the more favourable the prognosis. The other view taken by Dr. Squire, C.B., was that the incidence of tuberculosis in children



FIRST VISIT OF A CONSUMPTION DISPENSARY NURSE TO A TUBERCULOUS INFECTED HOUSE.

of school age was relatively rare, only a small number of children showing signs of active disease. The discrepancies in published statistics of the proportion of children who were tuberculous, was to

be attributed to the differences in the object of inquiry, and to some extent to the method of investigation. Most of the speakers, without supporting the ultimate view of Dr. Hamburger, were of opinion that tuberculosis was very common indeed in childhood. The general finding of the meeting was, that, as a rule, tuberculosis is acquired in childhood, remains dormant or advances slowly, but often becomes active during adolescence or in early adult life. Emphasis was laid upon the effect of unhealthy environment of the child from infancy. If this could be improved upon, the risk of infection would be greatly diminished.

"The Working Man in Relation to Tuberculosis." The final meeting of the Conference was devoted to this subject. There was a strong effort on the part of several speakers to press the inadequacy of voluntary and local effort to deal with the problem. The time had come, they said, when the State should take up the work and provide sanatoriums, hospitals, and dispensaries throughout the country. This, however, was not the general feeling of the audience, the majority deprecating the policy of legislation against a particular disease. Other public health questions were involved in the prevention of tuberculosis: The Housing Problem, Regulation of Employment, and other hygienic questions. Let the State take up these matters, and leave the more direct anti-tuberculosis measures to local and voluntary effort, which, as evidenced by the success of the Edinburgh Scheme, was quite capable of dealing with them. The voice of the Conference was against special legislation for tuberculosis, but desired that tuberculosis should be amply considered in the scheme for insurance against invalidity, which the Government had promised.

Looking back on the Conference, one is struck with the wide interest and enthusiasm which characterised all the meetings. The discussions were practical contributions to our knowledge of tuberculosis, and the best methods of dealing with the problem. Particularly as regards preventive measures, those who attended the Conference learned much from the expression of the opinions and experience of men actively engaged in the work. Edinburgh itself afforded an object-lesson of the greatest value to those desirous of learning what can be achieved by voluntary effort on co-ordinated lines. Similar enthusiasm was shown by the public in the evening lectures, nine in all, where questions relating to tuberculosis were dealt with in a popular and simple fashion. The audiences were never less than 600 or 700, and followed the speeches throughout, with the closest attention and appreciation. The effect of this series of lectures must be greatly to increase public interest on practical lines, and thus to aid materially the efforts of those engaged in working out the problem. This interest evinces a very real desire on the part of the people, to learn something

of the nature of the problem with which the Association is dealing, and a wish to participate in the work. It is for the Association to prove itself worthy of the confidence of the public.

The very success of the Edinburgh meeting is a convincing proof of the need for a greatly increased effort, if the Association is to lead the way. Every detail of the programme was framed to advance the knowledge, not only of the people, but also of the members of the Association, and to rouse them to the urgency of the occasion. Edinburgh has led in anti-tuberculosis effort and activity for well over twenty years, and the recent Conference shows that she is still worthy of the lead, and fully alive to the position she occupies in the anti-tuberculosis campaign. It will be a satisfactory outcome of the meeting if the Association comes more to the front, and takes its stand as a truly national body—inspiring, initiating, and supporting action all over the country. This it must do if it is to hold its position.

CRITICAL REVIEWS.

MEDICAMENTS IN THE MANAGEMENT OF
TUBERCULOSIS.

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THE day is nearly past when one expects to discover a drug which will cure tuberculosis when given by the mouth. Even the most enthusiastic manufacturer of synthetic remedies has almost ceased to ring the changes on the long-abused guaiacol. The output of tasteless, non-irritating compounds of guaiacol which, soluble or insoluble, won't upset the digestion seems for the time being almost to have ceased. With increasing knowledge of the relative vitality of the tubercle bacillus and the human tissues, it is universally recognized that no antiseptic strong enough to kill the tubercle bacillus can be supported by the living tissues without damage. Consequently the recent tendency in treatment has been to utilize the natural resisting powers of the body tissues. The most direct and promising method of treatment with bacterial extracts hardly comes within the scope of this brief review. Apart from the various tuberculins, there is not much demand nowadays for general remedies, except those comprised under physical and climatic treatment.

Enzymes in the Treatment of Tuberculosis.

But in the treatment of local forms of tubercle some interesting suggestions have been made. Up to quite recent times the chief applications used in the local forms of tubercle were organic iodine compounds, which in contact with the living tissue split up liberating iodine in an active form. The recent treatment by enzymes is, therefore, quite a new development along different lines. The polymorphonuclear leucocytes contain a proteolytic enzyme which can be extracted by water or by alternate freezing and thawing in salt solution. The lymphocytes do not contain an enzyme. In an ordinary acute abscess the pus consists chiefly of polymorphs, but in tuberculous processes the leucocytic response is almost entirely of the lymphocytic or mononuclear type. The difference between the pus of an acute and cold abscess was held by Jochmann¹ to account for

¹ Jochmann: *Münch. Med. Woch.*, January 5, 1909.

the different course of the two forms of abscess. In the acute form, owing to presence of the polymorphs, proteolytic ferment is present abundantly, and to this is due the local destruction of tissue and rapid ripening of the abscess. On the other hand, in tuberculous abscesses the proteolytic ferment is deficient; consequently the local destruction of tissue is not so rapid, and the thick albuminous secretion is not readily absorbed. To overcome this Jochmann suggested the local injection of the proteolytic leucocyte ferment into the aspirated cavity of tuberculous cavities. He soon found that a watery extract of leucocyte exudate, splenic pulp, or bone marrow, gave an active proteolytic enzyme which materially altered the local tuberculous conditions. Owing to the difficulty in preparing a suitable extract, he was led to test the clinical action of another enzyme more easily available. In trypsin he found an efficient substitute for the leucocyte enzyme. He employed a weak trypsin solution (a 1 per cent. solution in sterile normal saline solution to which 0.5 per cent. phenol may be added). With this solution Jochmann and Baetzer¹ obtained very good clinical results in cold abscesses, tuberculosis of the glands, bones, joints, etc. They inject from 1 to 2 c.c. into the cavity, and find that the exudate is more rapidly absorbed. It becomes altered in appearance and consistence, first into a brown syrupy fluid which later becomes thin and serous. The local action of trypsin on the walls of the diseased parts is also a potent factor in the treatment. Healthy tissue contains antitryptic principles which protect it from the action of trypsin, but in diseased tuberculous tissue this natural protective body seems to be wanting, so that the enzyme is able to digest the diseased tissue, which is replaced by healthy granulation tissue whereby the cavity is soon healed up. The most recent development of this enzyme treatment is due to work carried out in Bier's clinique. Hedin showed that animal charcoal had the power of absorbing trypsin from a watery solution without apparently affecting its digestive power, since the carbon-trypsin was still able to digest a casein solution. Falk and Sticker² repeated Hedin's experiments, and found that all forms of charcoal possess this property of absorbing trypsin, but the most suitable for their purpose was finely powdered vegetable charcoal, which gives up the trypsin readily in serum, casein, or other albuminous solutions. They have prepared a charcoal-trypsin which they call "carbenzyme." This preparation has given them good results in the trypsin treatment of malignant tumours. It is possible to obtain it in a pure sterile form, and with it almost no general reaction is obtained on injection, while sarcomatous tumour masses rapidly shrink in size.

¹ Jochmann and Baetzer: *Münch. Med. Woch.*, December 1, 1908.

² Falk and Sticker: *ibid.*, January 4, 1910.

Verth¹ has tested carbenzyme in various forms of surgical tuberculosis. Though he was at first working with an impure preparation, he thinks that the treatment is promising. His verdict, after a trial limited to a few cases, is that carbenzyme has a favourable influence in all forms of surgical tuberculosis. The response of the tissues is similar to that after injection of iodoform-glycerin, but the curative action is greater. He uses the drug as a thin suspension in $\frac{1}{2}$ per cent. soda solution, and of this about 2 to 4 c.c. is injected directly into the tuberculous cavity. The injection should not be repeated for several weeks. Though in some cases the injection does no good, in others a very rapid cure is obtained. From a more extensive trial, Borszky² apparently has come to very similar conclusions, though his results are not yet published *in extenso*. A still further development of the carbenzyme treatment is foreshadowed in recent work by Sticker and Falk,³ in which they have investigated the power of charcoal of absorbing radium emanation. This seems to have been originally noted by Rutherford, whose observation they are able to confirm. They find also that the simultaneous absorption by charcoal of radium emanation and trypsin does not interfere with the enzyme action, but rather intensifies its action.

Bismuth Paste.

Another form of local treatment which has recently had an extensive trial has proved to be by no means free from danger. Beck⁴ found that a vaselin paste containing 33 per cent. of bismuth subnitrate could be injected into tuberculous sinuses and fistulæ. Unfortunately, though the bismuth paste has valuable therapeutic action, it is by no means free from danger. Long ago the local application of bismuth salts to open wounds had to be abandoned, owing to the toxic action of the drug on absorption. The toxic action of absorbed bismuth has again become prominent, and at least three fatal cases⁵ have resulted. In each case the symptoms are similar. The gums become the seat of a blue line, and this is followed by stomatitis and gastro-enteritis. As minor degrees of poisoning seem not uncommon, this use of bismuth is likely to cease soon, especially as the toxic symptoms may first develop three weeks after the injection of the paste.

¹ Verth: *Münch. Med. Woch.*

² Borszky: *Berlin. Klin. Woch.*, June 6, 1910.

³ Sticker and Falk: *ibid.*

⁴ Beck: *Journ. Amer. Med. Assoc.*, January 2, 1909.

⁵ (a) Reich: *Beitrag z. Klin. Chirurg.*, Bd. 63, H. 1; (b) Matsuoka: *Zeit. f. Chirurg.*, Bd. 102, H. 4-6.

General Lines of Treatment.

In a few cases we find that general remedies are advocated to affect the cause of the disease. In three of the most recent cures the drug is administered hypodermically.

It was of course inevitable that the arylarsonates should be tried in the treatment of tubercle, but the unfortunate propensity which these drugs possess, of unexpectedly producing toxic amblyopia, is certain to cause them to be relegated to the therapeutic scrap-heap. Lundie and Blackie's¹ experience aptly illustrates this point. A combined treatment with *mercury* and *arsenic* is warmly advocated by Wright.² He holds that the recent discovery that tubercle bacilli can be got in the blood of even early cases of tubercle indicates that the disease is a systemic infection and requires systemic treatment. He uses deep muscular injections of mercury succinimide. Beginning with $\frac{1}{15}$ grain every other day, this dose is slowly increased till the gums become slightly tender or diarrhoea is produced. The dose is then reduced till these symptoms pass off, and the injections are continued till thirty in all have been given. Then after a rest of fourteen days treatment is resumed with the dose used before stopping, and this quantity is given as long as the patient improves for a further course of thirty injections. If any untoward symptom appear or if the patient ceases to improve, the mercury is reduced in dose and given alternately with arsenious trioxide $\frac{1}{30}$ grain on the same plan of thirty injections, and then a rest of fourteen days. As treatment goes on, it will be found necessary to reduce the doses. If the treatment is doing properly, there is improvement in both local and general symptoms; but if the dose is too large, slight mercurialism will be produced, with loss of flesh or diarrhoea, gastric disturbance, fever, and increase of cough and spit. With the treatment Wright claims good results, irrespective of the organ or tissue involved in the disease. Out of eighty-three patients submitting themselves to this plan of treatment in 1908, eighty-nine per cent. were improved, and seven definitely cured; while twenty cases out of twenty-four of secondary ulceration of the larynx were cured. Of seventy-eight patients simultaneously treated on the ordinary lines, only 12.8 improved. In 1909 the results are said to have been even better, and several naval men were able to pass stringent examination tests before being reabsorbed into active service.

Penrose³ has also used this mercurial treatment, but combines it with tuberculin, and finds that after a mercury course the patient is able to stand four or five times the quantity of tuberculin he could take before the course.

¹ Lundie and Blackie: *Brit. Med. Journ.*, 1910. ² Wright: *Med. Annual*, 1910.

³ Penrose: *Journ. Amer. Med. Assoc.*, January 1, 1910.

Sea-Water Injections.

A much less dangerous method of treatment consists in the injection of diluted sea-water, which is in extensive use in France for the treatment of tubercle and malnutrition. Sea-water contains about 3·3 per cent. of mineral salts, and on diluting 2 parts of sea-water with 5 parts of fresh water a solution is got isotonic with blood-plasma, and almost identical to it in mineral content. In this solution leucocytes retain their activity, and it is claimed that the salts are present in the proper proportion for building up the tissues and cells of the body. Injected into the deep subcutaneous tissue, this diluted sea-water is stated¹ to possess very remarkable tonic properties, which enables it to increase the power of the body to resist infection, though the solution is devoid of bactericidal action. For therapeutic purposes the sea-water should be obtained about twenty miles from land, and at a sufficient depth, say 36 feet, to avoid surface contamination. After mixing with plain water it is sterilized by passing through a porcelain filter. Boiling destroys the peculiar value of the solution, and the solution should not be more than three weeks old. In surgical forms of tubercle, lupus, etc., from 50 to 200 c.c. is injected every third day, the injections being always made in the same part, preferably the trochanter or scapular regions. In pulmonary tuberculosis the treatment, which can of course be carried out anywhere, is most suitable for quiescent afebrile forms of the disease, in which its valuable power of stimulating appetite and digestion is of great benefit. Boutillier² also finds that the injections remove the malnutrition in tuberculous disease.

Menthol-Eucalyptol.

Lastly, Berliner³ has recently published an article in which he strongly advocates the intramuscular injection of a solution of menthol and eucalyptol in castor-oil, or preferably in a derivative of castor-oil, oleum dericini. He states that the injections are not painful, and are valuable in phthisis in the first or second stages, causing the expectoration to be lessened and alleviating cough. The solutions he uses contain 10 parts menthol, 20 parts eucalyptol, in 100 parts of ol. dericin., or a 1 in 3 solution of menthol in ol. dericin. Of these, he injects at first 2 c.c. three or four times a week into the gluteal region. Later, as the case improves, a solution double as strong is used twice weekly in the same dose.

¹ *Berlin. Klin. Woch.*, May 23, 1910.

² Boutillier: *New York Med. Journ.*, March 19, 1910.

³ Berliner: *ibid.*, June 11, 1910.

CLIMATOLOGY AND TUBERCULOSIS.

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THE importance of the relationship between climate and tuberculosis has recently been more appreciated than formerly. In bygone years climate used to be considered of greatest moment in therapeutic arrangements. Recently the opinion has prevailed that climate has but little influence on tuberculosis. Some go so far as to claim that the tuberculous patient must be cured under the same climatic conditions as prevail in the district in which he will have to live and work. Rapidly the importance of climatic conditions on tuberculosis is being recognized. Climate is a great factor in the systematic and modern treatment. Theodore Williams has given us important data.¹ Many other publications regarding climate and tuberculosis have appeared. "Undoubtedly proper care is the most important treatment of tuberculous patients, and proper care in a bad climate is much better than no care in a good climate"; but "the very best of all is proper care in the best possible climate. . . ."²

General Principles.

The important factors to be considered in the selection of a good climatic station for lung patients are: *Freedom of the air from dust and smoke and absence of winds and fogs*. Climates vary according to temperature and pressure of air, amount of moisture, direction and force of wind, and amount of ozone. It is necessary to individualize for each patient. All climates may be of value in securing the removal of a patient from unhealthy conditions and introduction to a new and suitable environment.³

The selection of a climate is of equal importance to the prescription of a medicine. Physicians should study climatology more than is usually done. It has been suggested that a large *enquête* should be undertaken by special inquiries of all physicians practising at

¹ WILLIAMS, THEODORE: "What Influence has Climate on the Treatment of Consumption?" Transactions of the British Congress on Tuberculosis, vol. ii., 1901, and Transactions of the International Congress on Tuberculosis at Washington, 1908.

² AMREIN, O.: "High-Altitude Treatment of Phthisis, with Special Regard to Febrile Conditions," Transactions of the International Congress on Tuberculosis, Washington, 1908.

³ MÖLLER: "Die Klimat. Behandlung Lungenkranker," *Med. Klinik*, No. 22, 1910.
ENGEL: "Zur Differentiellen Klimato-Therapie der Lungentuberkulose," *Zeits. f. Balneologie*, i., No. 11, 1909.

climatic stations and specially experienced. The most important factors will always be *purity of the air, absence of sudden and great changes of temperature*. Districts where still air prevails are generally more suitable to phthisical patients than windy ones.

The amount of sunshine and light is of the greatest value.¹ Experiments have shown² that the sun's rays have a tonifying and microbicidal power and a distinct influence upon the bloodvessels, the blood-pressure, and the development of phagocytes and pigment.

Alpine climates, middle-altitude climates, warm inland climates, marine climates, and desert climates afford the chief climatic stations suitable for consumptive patients.

Alpine Climates.

The properties of the high-altitude climates are: *Low barometric pressure, dry and pure air, abundance of sunshine, great actinic power, and bright and clear days*, especially in winter.

The physiological effect³ upon the different organs is mainly a tonic one. The bodily functions are increased, hæmoglobin and red blood-corpuscles are augmented, a diminution of the elimination of nitrogen takes place, and the respiratory quotient increases. It has also been shown that respiration becomes deeper in high altitudes, and chest-measurements⁴ have proved that not only the maximum circumference increases, but the minimum circumference of the chest becomes smaller. Therefore the difference between breathing in and out is greater—*i.e.*, the function of the lung is improved. Night-sweats usually disappear after the first few days. Expectoration diminishes, and a new vitality and life-power are given to the organism. If the constitution of the patient is strong enough to stand the altered conditions which the high altitudes produce, rapid improvement generally occurs.

The *contra-indications* to a residence in high altitudes are: Irritative stage of the tuberculous process, too little resistance-power of the skin, anæmic conditions and organic disease of the heart and kidneys, advanced diabetes, tuberculosis of the intestine, grave affection of the larynx. Cases of extensive tuberculosis of the lungs, with hectic fever and tendency to deterioration, and all nervous and erotic

¹ MORIN: "Sonnenlicht und Tuberkulose," *Tuberculosis*, viii., No. 7, 1909.

KNOPF: "Sun, Air, and Water," *Life and Health*, Washington, February-June, 1908.

BRUNNER: *Korrespondenzblatt f. Schweizerärzte*, p. 735, 1903.

WIDMER: *Medicin. Klinik.*, No. 45, 1909.

² "Bains de Soleil," *Tuberculosis*, ix., No. 2, 1910.

³ AMREIN: "The Physiological Principles of the High-Altitude Treatment," etc., *Transactions of the British Congress on Tuberculosis*, Vol. II., London, 1901.

⁴ AMREIN: "Ueber Brustumfangmessungen an Lungentuberkulösen im Hochgebirge," *Zeits. f. Balneologie und Klimatologie*, etc., II., No. 19.

patients, and those with a pulse over 120,¹ usually do badly in high stations.

Indications for residence at high altitudes may be concisely summarized, as are all cases of pulmonary tuberculosis in the early stages and those with good power of resistance; also patients with much expectoration. Fever need not be considered a contra-indication.

The following record of personal observation will be of interest:

At Arosa, of 51 patients with fever up to 38.5° C. (= 101.6° F.), and in stage 1, 51 (= 100 per cent.) lost their fever.

At Arosa, of 9 patients with fever higher than 38.5° C. (= 101.6° F.), and in stage 1, 6 (= 66.6 per cent.) lost their fever.

At Arosa, of 47 patients with fever up to 38.5° C. (= 101.6° F.), and in stage 2, 41 (= 87.2 per cent.) lost their fever.

At Arosa, of 47 patients with fever higher than 38.5° C. (= 101.6° F.), and in stage 3, 37 (= 78.7 per cent.) lost their fever.

At Arosa, of 4 patients with fever up to 38.5° C. (= 101.6° F.), and in stage 3, 37 (= 55 per cent.) lost their fever.

At Arosa, of 15 patients with fever higher than 38.5° C. (= 101.6° F.), and in stage 4, 2 (= 48 per cent.) lost their fever.

A tendency to hæmorrhage is not to be considered a contra-indication for high-altitude treatment. Statistics show that hæmorrhages are not more frequent, but, on the contrary, less frequent, in high altitudes than in the lowlands.² Tuberculous infiltrations are most quickly reabsorbed at high altitudes. On the other hand, irritable cases of pleurisy are made worse.

The ultimate durable results of treatment in high altitude of pulmonary tuberculosis show a great superiority to management undertaken in other climates.³ It is an error to suppose that the summer-time is a hot season in the mountains. The highest temperature in July for Arosa is only 54° F. Patients can reside there with benefit all the year through. The following are among the chief Alpine resorts for consumption: Davos⁴ (5,000 feet above sea-level); Arosa⁵ (5,740 to 6,070 feet), Leysin (4,757 feet), Les Avants (3,232 feet), and Caux (3,690 feet). Other high-altitude resorts: South Africa (Transvaal) and Colorado.⁶

¹ PHILIPPI, H.: "Die Lungentuberkulose im Hochgebirge," Stuttgart, Enke, 1908.

² BERNSTEIN-KOHAN: "Untersuchungen über den Verlauf und die Dauererfolge der Lungentuberkulose im Hochgebirge" (Dr. Amrein's patients at Arosa), *Inaugur. Diss.*, Zürich, 1910.

³ RUGE: "Dauererfolge nach zehn Jahren bei Lungentuberkulose im Hochgebirge," *Zeits. f. Tuberkulose*, Bd. xv., Heft 12.

TURNER: "Statistik der Dauererfolge aus der Bernischen Heilstätte Heiligen-schwendi," *Zeits. f. Tuberkulose*, Bd. xv., Heft 1.

HEGL, K.: "Ueber Erfolge d. Heilstättenbehandlung im Hochgebirge bei Lungenkranken des III. Stadiums," *Schweiz. ärztl. Mitteilungen aus Universitäts-instituten*, 1910, Heft 1.

BOGDANOFF: "Einfluss d. Gebirgsklimas auf d. Heilung d. Lungenkranken," *Sovremennia Hygiene*, Sofia, 1909, III. 5.

⁴ SPENGLER, L.: "Davos," *Zeits. f. Balneologie und Klimatologie*, ii. 13.

⁵ AMREIN, O.: "Arosa," *Zeits. f. Balneologie und Klimatologie*, ii. 14.

⁶ HUGGARD, W. R.: "Handbook of Climatic Treatment," London, 1906.

Middle-Altitude Climates.

These may be defined as stations having an elevation above sea-level which is more than 400 metres (= 1,200 feet), but not exceeding 1,200 metres (= 3,700 feet). The climate is suitable for patients who are sensitive to a great heat. Many of the patients who cannot stand high altitudes do very well at this height when sent there afterwards. Of such health-resorts the following are examples: Badenweiler, St. Blasien (Black Forest), Weissenburg (with lime-water spring), Reinerz, and Salzbrunn.

Warm Inland Climates.

On the southern side of the Alps, sheltered from north winds, the climate shows an astonishingly mild character, and is often suitable for non-advanced tuberculous patients who like to avoid a northern winter, not too far away and not much down in the south. These health-resorts include: Locarno and Pallanza, on the Italian lakes; Arco, Bozen-Gries, Meran, in the Tyrol; Gardone, on the Lago di Garda.

Marine Climates.

The climates of the sea-coasts have these advantages in common: *Freedom from dust and smoke, abundant humidity, high pressure of the air, more equable temperature than in inland districts, but more wind and a large amount of light and sun.* The sea climates have a strengthening effect upon the respiration and the heart, but an exciting effect upon the nervous system. As for cures in high altitudes there must be a certain resistant constitution, so also for cures in marine climates. Weak and irritable patients do not do well there. But the different sea-coast health-resorts vary from the point of view of more or less wind (bracing and relaxing climates), and of warmer and colder mean temperature of the air. The resorts on the Baltic Sea and North Sea coasts generally are not suitable for lung patients; they are frequented usually in summer only.¹

The climate of the British Isles is warmer and more equable than could be expected from their latitude.² The Gulf Stream carries much warmth inland by the south-west winds, and this influence of the Gulf Stream is especially important in the winter months.³ In summer and winter it is the south coast of England which is known as a health-resort for consumptives; Margate and Ramsgate are chiefly frequented by chronic forms of tuberculosis. Bracing places, and only good for stronger tuberculous patients with not too irritable a nervous system, are: Dover, Folkestone, St. Leonards, Hastings,

¹ HENNIG: "Der Einfluss der Deutschen Meere (Ost- und Nordsee) auf die Tuberkulose der obren Luftwege," *Reichsmedizinalanzeiger*, 1908, 17, 18.

² HUGGARD, W. R.: "A Handbook of Climatic Treatment," London, 1906.

³ *Ibid.*

Eastbourne and Brighton. Softer and milder places: Worthing, Isle of Wight (Shanklin and Sandown cooler; Ventnor warmer, not suitable for severe hæmorrhagic cases or advanced laryngeal affections),¹ Bournemouth, Weymouth, Torquay (extremely mild), Falmouth (especially suitable for cases with dry, irritable catarrh of the pharynx, larynx, or bronchial tubes, and for some chronic cases of phthisis, but not for cases of active tuberculosis.)²

The Mediterranean has an old and great reputation for being a specially suitable climate for consumptives, and is nearly exclusively visited by such patients during winter. Consumptives who are not resistant any more to stand Alpine climates or other bracing climates, with anæmia, weak heart, kidney troubles, laryngeal affections and irritable membranes of the upper air-passages and bronchial tubes, are benefited in those climates; also patients with a tender skin and dyspnœic persons. The chief stations are those of the Riviera, in Corsica, in Sicily, and Capri. Riviera places: Hyères, Cannes, Nice-Beaulieu (the French Riviera is dryer), Mentone, Bordighera, San Remo, Ospedaletti, Alassio, Pegli, Nervi (more for nervous patients with dry cough), Santa Margherita, Rapallo, Sestri-Levante.

In Corsica: Ajaccio (perfect freedom from dust, moderate winds).

In Sicily: Taormina (only for patients who can stand a long journey and for non-febrile cases).

At Capri cases with chronic bronchitis do well, but the place is not suitable for febrile patients. Irritable persons are greatly bothered by the frequent siroccos.

Abbazia,³ on the Adriatic Sea, has a similar climate to the Italian Riviera, but has much less dust.

Madeira, with an equable, warm, and moist climate, will do well for patients with little power of resistance, irritable mucous membranes, and with little expectoration.⁴

By some people "floating sanatoria" have been recommended, in order to benefit by the sea climate and to be able to travel about from one climate to the other, according to the weather, winds, etc.; but whoever recommends such things does not know the very sudden changes of weather on the sea, when the passengers have to remain in their shut-up cabins with bad air and the oily smell, and does not know that the invalids have no rest whatever because of the constant shaking and vibration of the engines.⁵

¹ HUGGARD, W. R.: "A Handbook of Climatic Treatment," London, 1906.

² *Ibid.*

³ GLAX: "Lehrbuch der Balneotherapie," vol. ii., Stuttgart, 1900.

⁴ SOKOLOWSKI: "Zur Klimatotherapie Madeiras f. d. Kanar. Inseln.," *Zeitschr. f. Tub.*, xvi., Heft 1, 1907.

⁵ MÖLLER, *loc. cit.*

Desert Climates.

The desert shows a great abundance of sunshine and excessive dryness of the air. Patients with laryngeal trouble who are not benefited at the Riviera or in Corsica very often do well there; also chronic forms with much expectoration. Examples of these health-resorts: Biskra, Helouan, Luxor.

As mentioned above, there are no strict lines for ordering a special climate to tuberculous patients. To individualize is the great thing. Nothing can be expressed better than that said by Huggard¹: "In regard to the choice of climate in tuberculosis, the stage of the disease, and then the extent of it, are comparatively unimportant, and the chief condition which determines the fitness of a certain climate for a certain patient is the capacity for tissue change and the general power of nutrition in the patient. The climate that offers the greatest likelihood of improvement or of arrest in early phthisis and of alleviation in advanced phthisis is that climate where the patient's nutrition is at its highest level; and this highest level is secured in a cold climate to one patient of high assimilative capacity, while it is secured in a warm climate to another of feeble nutritive power. In any case, the climate that makes that demand on the assimilative powers generally to which the organism can best respond is that which will secure the highest resistive power to tubercular disease."

¹ HUGGARD: "A Handbook of Climatic Treatment," London, 1906.

PERSONAL OPINIONS.

THE INFECTIVITY OF CONSUMPTION.

BY THE RIGHT HON. ROBERT FARQUHARSON,

P.C., M.D., LL.D., J.P., D.L.,

Formerly Medical Officer to Rugby School and Assistant Physician to
St. Mary's Hospital.

WHEN I was a student, we were taught to look upon Italian doctors as little less than lunatics, because they held strongly to the belief that consumption was infectious. Then came Villemin with his inoculation experiments, and the medical pendulum has now swung energetically in the other direction, and the scare-ridden public have rushed vehemently into one of its periodical epidemics of "funk." Consumptives are looked upon with suspicion. Certain foreign health-resorts were banned because a few poor victims were seen to walk feebly about or to occupy Bath-chairs, and if they coughed at a *table d'hôte* or looked flushed or feverish, or seemed off colour generally, a thrill of alarm ran through the neighbouring guests. And if the advanced school had its way, everyone with a dull spot under the clavicle or whose sputa contained the faintest trace of an invading microbe must be notified and isolated, and prevented from following his usual occupation, and hounded as a leper, and forced to become a burden on the State.

Now, is there any real excuse for all this? I think not. Tuberculosis is rapidly diminishing under the influence of sanitary and hygienic precautions, and in my humble judgment its infectivity has been largely exaggerated. And I will place my reasons for the faith that is in me under a few headings:

1. I am not convinced of the absolute analogy between a notoriously susceptible animal like a guinea-pig, into whose tissues an overwhelming dose of tubercle is inserted, and which subsequently becomes infected, and a human being who receives a few stray microbes, which first encounter the gastric juice at their entrance through the stomach, and then the watchful phagocytes at the shore of the torrent of the circulation, and then varied physical conditions which persuade the tubercle to become obsolete in the lungs, as we so often see in the post-mortem theatre.

2. If tubercle were so infectious as is generally supposed, nurses in consumptive hospitals would speedily become victims; but the

evidence of Dr. Theodore Williams and others shows that this is not the case.

3. Meat stripped of glands and effectually cooked is not dangerous, and milk drawn from a cow which shows no gross disease of the udder can be consumed with impunity. But in case of suspicion, boiling renders it absolutely sterile. Much stress is laid on the frequency of mesenteric disease in children as a proof of the infectivity of milk; but this is much oftener due to auto-infection from enlarged glands or tonsils.

4. Personal contact with a consumptive conveys nothing. There are no microbes in his breath, and although, of course, the sputa are the main channel of communication, strict sanitary precautions can always protect us from this source of infection.

Finally, let us place in the witness-box some undeniable authorities. Sir Douglas Powell, quoted by Dr. Samways, says: "My own personal experience and observation convince me that, apart from artificial conditions, such as those brought about by experiment and in the ordinary circumstances of life, phthisis is not an infectious malady."

And Dr. Bulstrode writes: "Tuberculosis may perhaps be viewed as occupying a distinct and separate position from the exanthemata, and, as regards its duration and *low degree of infectivity*, meriting a class by itself."

5. Perhaps there is something in "Koch heresy," after all. Possibly I am very retrograde, but I believe in the hereditary transmission of tubercle, in its manufacture by bad food and housing and clothing and subsoil; and although it is therefore Utopian to hope to stamp it out altogether, we may diminish its incidence and lessen its severity by prompt and effective observance of the laws which Nature has prescribed.

THE DEPORTATION OF THE TUBERCULOUS.

BY REV. T. HUNTER BOYD,

Corresponding Secretary of the Provincial Association for the Prevention of Tuberculosis, New Brunswick, Canada.

As an offset to the old belief in the influence of heredity as a factor in the production of tuberculosis, the citizens in the United States and Canada are now being systematically taught that it is largely a house disease or an occupational disease. This will doubtless exercise a salutary influence upon the housing problem and upon the sanitation of factories and workshops. But meantime it is clear that a very severe strain is imposed upon all immigrants who do not construct new houses or engage in outdoor pursuits. It is difficult to avoid

infection in all the larger centres ; but if the new-comer breaks down, and is liable to become a public charge or seeks institutional aid, his case will be reported to the Federal authorities, and they may require him to be sent back to the place whence he came. This is liable to occur during a period of three years after arrival in Canada or the United States. If the question of morality emerged, as it invariably does, in the contraction of syphilis, it would wear a different aspect ; but a municipality is not compelled to prove that the person whom they desire to have returned to Europe had contracted tuberculosis before leaving his native land.

The Federal Government of the Republic or the Dominion, through its Immigration Department, is ready to assist in returning immigrants who have failed to stand this test during the probationary period. The Governments of Canada and the United States, however, do not attempt to interfere with the hygienic conditions that have rendered the failure possible. This is owing to the interpretation of State or Provincial rights. No fault is suggested with the carrying out of the regulation ; it is only desired at this point to set forth that persons who leave Europe for Canada or the United States, who have reason to fear the incidence of tuberculosis, should avoid congested centres and unhealthy occupations. The accommodation for advanced cases of tuberculosis is very limited in both countries, and it is hardly likely that institutions will furnish beds for persons who can be deported if proper application be made. The whole question of the dissemination of disease by returned immigrants to all parts of Europe requires consideration ; and as these regulations have now been in force for three years, data should be forthcoming as to the medical and economic aspects.

These are very difficult problems. We do not deny the right of Canada and the United States to defend their citizens from the introduction of tuberculous "undesirables." Many of these persons are extremely "undesirable" in the countries of Europe whence they take their passage, and still less desirable after making a trip across the Atlantic, it may be, in steerage quarters. They cannot be refused admission to their homelands, but surely they are bound to become a menace as well as a burden when they return with diseases which have been either contracted or accentuated during a stay of nearly three years in Canada or the United States, and then proved to be unfit. It is tolerably clear that the return of such persons has imposed new problems, which merit consideration in an international tribunal. The nations have learned to care for military and naval prisoners, but what of the citizen who in the industrial struggle contracts the disease called tuberculosis ? Happily, the anti-tuberculosis campaign is gradually reducing the factors which give the specific germ a chance !

INSTITUTIONS FOR THE TUBERCULOUS.

THE SANATORIUM OF THE NATIONAL CHILDREN'S HOME AND ORPHANAGE.

THE Sanatorium for Children threatened with Consumption is the latest development of the work of the National Children's Home and Orphanage. It was opened on June 8 by Lady Wernher, and Sir Thomas Barlow, Bart., M.D., President of the Royal College of Physicians, in an address delivered on the occasion, said: "I venture to foretell that from this sanatorium and its work there shall arise in years to come enlightened effort for poor children in general, which will make their lives more wholesome, more healthy, and more blessed, than anything which we can now realize."

The purpose of this brief record is to indicate the chief structural features of the sanatorium, and for much of the following description we are indebted to the architects, Messrs. Holman and Goodrham, of 6, King's Bench Walk, Temple. The builders are Messrs. Phillips and Blake, of Harpenden.

The Sanatorium is built on a ridge some 430 feet above sea-level, and commands a fine view of the surrounding country. It is designed to accommodate fifty patients.

The building faces almost due south. In the centre is placed the large dining-room, having a fine seven-sided bay-window, which opens on to a wide veranda. Adjoining are the nurses' sitting-rooms, wards (each to accommodate eight patients), and nurses' bedrooms, with inspection windows commanding a complete view of the wards; several single wards, the physician's examining-room, and the dispensary.

All the wards have casement windows, the centre ones being French casements sufficiently wide to allow the passage of a bed, so that the patient may be taken directly from the ward on to the veranda.

On the north of the wards is a wide and well-lighted corridor with spacious bay-windows, where the little patients in hot weather can rest in the cool. The walls of the corridors are lined with tiles.

Beyond the corridor, and separated by a well-ventilated lobby, are placed a large kitchen, scullery, stores, etc. Below is the heating apparatus for supplying hot water for the baths and for the warming of the corridors in cold weather.

A dinner-lift is provided near the kitchen for conveying food, etc., to those patients on the first-floor who are unable to take their meals in the dining-room.

Bath-rooms, cloak-rooms, and lavatories, are placed at each end of the building and to the north side of the corridor.

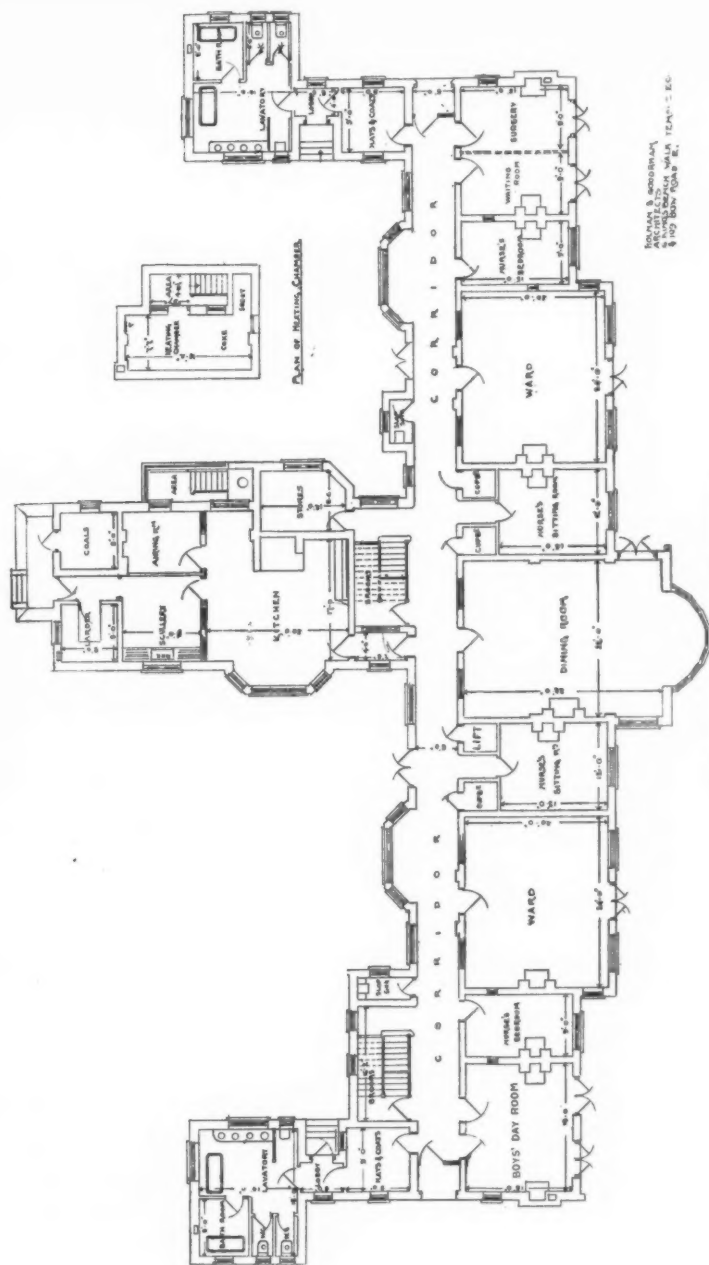
The first-floor is approached from two well-lighted staircases

(these are constructed of teak, one of the best of fire-resisting materials). The corridor on the first-floor, which is immediately over the ground-floor corridor, is also provided with bay-windows. On this floor are three large wards, each for eight beds—one double ward and two single wards for acute cases. The nurses' bedrooms are arranged with inspection windows for overlooking the wards.



FRONT OF THE SANATORIUM OF THE NATIONAL CHILDREN'S HOME AND ORPHANAGE, HARPENDEN, FOR CHILDREN THREATENED WITH CONSUMPTION.

All the wards have French casements sufficiently wide for the passage of beds to the large balcony, where patients may lie in the open. At the end of the balcony is an outside teak staircase, so arranged that in an emergency the patients can be taken out of the wards, along the outside balcony, and down the teak staircase to the ground. At the rear of the corridor, and over the centre portion, are placed the bedrooms for the staff.



At the ends of the corridor are the bath-rooms, lavatories, and linen cupboards.

Externally, as is shown in the illustration on p. 265, the sanatorium presents a simple but pleasing appearance. The general arrangement is indicated in the accompanying plans.

The walls are built of local red bricks, and the roofs are covered with hand-made local reddish-brown tiles. The first-floor walls are in parts rough-cast, and a little ornamental hand-made tile hanging has been introduced. The gables are treated with simple half-timber oakwork, and in the centre gable is placed the sundial with the motto :

"Time hastens; therefore do to-day
Whatever kindly deed you may."

Surmounting this centre gable is a quaintly-designed bell-turret, which forms a landmark for the surrounding country, and is in harmony with the rest of the building.

Open-air shelters are arranged in various parts of the grounds.

At the back of the sanatorium, and some 60 feet away, is the laundry.

The gardener's cottage is placed at the entrance-gates, and will serve as a porter's lodge.

The grounds will be laid out in terraces, with lawns and flower-beds.

An open-air school is to be erected immediately.

Dr. T. N. Kelynack is the Visiting Physician.

"The Care and Cure of Consumptive Children" is an illustrated booklet giving plans of the Harpenden Sanatorium, which will be forwarded on sending postal order or stamps for 6d. to the Secretary, National Children's Home, Bonner Road, London, N.E.

The Principal will be glad to give any particulars as to the admission of children as patients. Application should be made to the Principal at the Central Office, Bonner Road, N.E.

ARTHUR E. GREGORY, D.D.,

Principal of the National Children's Home and Orphanage.

HEALTH STATIONS.

DARTMOOR.

"Years have rolled away. I have wandered over Europe, have rambled to Iceland, climbed the Alps, been for some years lodged among the marshes of Essex—yet nothing that I have seen has quenched in me the longing after the fresh air and love of the wild scenery of Dartmoor. There is far finer mountain scenery elsewhere, but there can be no more bracing air, and the lone upland region possesses a something of its own—a charm hard to describe, but very real—which engages for once and for ever the affections of those who have made its acquaintance."—*S. Baring-Gould*.

BEAUTIFUL South Devon suffers from one fault for the invalid, more especially for the consumptive—it is too relaxing. Such is the general verdict. But, like all generalizations, this is but partly true; for,



VIEW FROM A DARTMOOR HILLSIDE.

indeed, in many parts of Devonshire the tuberculous recover health, but in no part so well as on the breezy slopes of Dartmoor. It is to many a matter of surprise that Dartmoor should have such health-giving properties, since by reputation the locality is cold, damp, and foggy. One must, however, repudiate strongly this description. The rainfall is high, but, then, rain is heavy when it comes, and it is quickly over, and the country dries again rapidly. Mud and slush are almost unknown on the moorland roads.

Princetown, certainly, the Dartmoor prison town, at an altitude of nearly 1,500 feet, possesses an inclement climate—fog and damp prevail; but even here the medical officers to the prison bear witness

to the cure of phthisis amongst their clientèle, though doubtless the criminal classes would tend to get well, under the healthy existence so rigorously enforced. The visitor to Dartmoor soon realizes the bracing effect of the moor air—air borne straight from 3,000 miles of ocean, yet lightened in its ascension toward the upland. Moor air and sea air—herein, I believe, lies the secret of its worth.

In describing Dartmoor, one would call it a rugged tableland, roughly twenty miles by twenty, of an average height of 1,200 feet, broken by "tors" of naked stone, which rise above the surrounding wastes of heather, gorse, and peat bog. Here and there steep valleys cut by Nature's mighty chisel convey the streams arising from this watershed to the fertile lands and pastures down below.¹

Since the dawn of civilization, the charm of Dartmoor has exercised its sway over the destinies of mankind. Ancient Druids have built



ROCK PILE ABOVE HOLWELL FARM, DARTMOOR.

their cromlechs and stone avenues in this lone and barren land, and the traveller of to-day, who stands before these old-time monuments wonders no longer at their choice. He also feels the fascination which impelled the footsteps of those men two thousand years ago.

Year by year the locality is becoming more and more popular, and visitors can now reach it easily and rapidly from London. The London and South-Western main line skirts the northern and western sides, whilst the Great Western Railway runs along the eastern and southern borders, and provides several branch lines to the district. One would advise invalids to choose their residence from amongst the many towns and villages lying on the slopes of the hills, as thus

¹ The two typical Dartmoor scenes illustrating this article are reproduced from "Gems in a Granite Setting," by William Crossing, with the kind permission of the publishers, The Western Morning News Company, Limited, 31, George Street, Plymouth, Devon.

they will avoid the discomforts of the upland fogs, whilst sharing the benefits of the bracing air. On the north one may mention Okehampton and Belstone ; on the south, Ivybridge, Brent, and Cornwood ; on the east, Chagford, Mortonhampstead, and the villages around Ashburton and Buckfastleigh ; and on the west, Tavistock, Lydford, Bridestowe, and Yelverton.

There are three sanatoriums on Dartmoor : The Dartmoor Sanatorium at Chagford, the resident physician of which is Dr. A. Scott Smith ; Udal Torre Sanatorium at Yelverton, the physician in charge being Dr. J. Penn Milton ; and the Didworthy Sanatorium, near South Brent, a large charitable institution for Devon and Cornish consumptives.

One should not close this short article without mentioning the facilities for sport of every kind which Dartmoor affords. Hunting, shooting, fishing, golf—all can be obtained without difficulty. The first is of its kind unique. Who can experience and ever forget the glorious exhilaration of a wild gallop over the springy heathery turf, scent breast-high, and the hounds always in sight from start to finish, with a kill in the open !

H. WARREN CROWE, M.D.,
*Author of "Consumption : Treatment
at Home and Rules for Living."*

NOTICES OF BOOKS.

THE ANTI-TUBERCULOSIS MOVEMENT IN GERMANY.

It is always a pleasure to study the yearly Report issued by the Central Committee of the German National Society for the Combat against Tuberculosis.¹ It is all that a report should be—clear, concise, informative, suggestive, and eminently readable. The Report is the work of Professor Nietner, a man whose life-work is the study of tuberculosis and of measures for its prevention. The Central Committee has recently held its fourteenth annual general meeting in Berlin. The Society receives powerful support from the Imperial Government, both practically and financially. Until he was elected Reichskanzler, Herr von Bethmann-Hollweg filled the post of President. He has been succeeded by Herr Delbrück, the Imperial State Secretary for Home Affairs. The late Dr. Robert Koch was a member of the Executive Committee, and his death has hit the Society very hard. The Report furnishes interesting details regarding income and expenditure. In 1909 the Imperial Exchequer made a grant of £3,000 to the Central Committee. The total receipts amounted to £34,172, a sum of £20,461 being derived from State lotteries. Subscriptions and donations from members amounted to £1,712. The Committee made a grant of £300 to the German Central Committee for Dental Care among School Children, which was devoted to the printing and distributing of leaflets. This shows that the Committee recognize the intimate connection between dental prophylaxis and the prevention of tuberculosis. £8,370 were paid out to sanatoria and other tuberculosis institutions, and £854 were spent on travelling tuberculosis exhibitions. The Committee consider the last sum well spent, as the results have been most encouraging. £200 were handed over to the International Union against Tuberculosis. The actual administrative expenses of the Central Committee only amounted to £2,658, including printing and library expenses, and the financial year 1910 was started with £18,530 in hand. Professor Nietner assigns a very prominent place to improved housing among the forces of battle in the war against the tubercle bacillus. He strongly deplores that only *death* from tuberculosis is compulsorily notifiable as yet in Germany, and yearns for an Imperial Act enforcing the notification of every manifest case of the disease. On the other hand, the Enactment of the Prussian Kultusministerium of October 16, 1908, rendering house disinfection obligatory in all cases of "open" tuberculosis after death, removal to a sanatorium, or change of residence, has been productive of excellent results. The mortality figures continue to show a steady decline. In 1908 the mortality was 16.6 per 10,000; in 1909 it had

¹ "Deutsches Zentral-Komitee zur Bekämpfung der Tuberkulose: Geschäftsbericht für 1909" (Yearly Report of the German Central Committee for the Combat against Tuberculosis). By Professor Nietner, M.D., General Secretary to the Central Committee. Pp. 184. With 20 illustrations. Berlin: Deutsches Zentral-Komitee zur Bekämpfung der Tuberkulose, 11, Königin Augusta Strasse, 1910.

decreased to 15.5. Unfortunately, the decline in the mortality among *children* does not keep step with that among *adults*, in spite of vigilant school medical inspection and of many admirable measures for checking the evil. In 1909, 16,000 persons died of tuberculosis in the German Empire. Since 1875, 275,000 persons suffering from pulmonary tuberculosis have received sanatorium treatment, 195,000 being men. The total cost amounted to £5,000,000, and the average duration of the treatment covered seventy to eighty days. Eighty-six per cent. of 1,268 persons treated in 1908 were reported as being, potentially, living-wage earners in the following year. No one who studies this Report can fail to be struck anew with the intelligent and powerful part played by the Imperial Invalidity Insurance in the combat against tuberculosis in Germany. The Invalidity Insurance has thirty-one great branches throughout the Empire—the Landes-Versicherungs-Anstalten. These are powerful bodies, and are ready, when proper representations are made to them, to advance money for building "Heilstätten" or for erecting workmen's model dwellings on a 3 per cent. rate of interest. They themselves have erected no less than thirty Heilstätten, providing 2,675 beds for men and 1,400 for women, reaching a total of over 4,000 beds. A delightfully written account of "graduated labour," as carried on in the Landes-Versicherungs-Anstalt "Sophien-heilstätte," in Thuringia, is one of the best items in this Report, and is contributed by Dr. Koppert, the medical director of the sanatorium. The Germans have lately introduced the system of graduated labour, which is now an accepted order of things in sanatorium ethics in England, dating from the classic Frimley experiments organized by Dr. M. Paterson. In Germany, these labour-exercises are called "Beschäftigungs-kuren," or "work-cures." Dr. Koppert describes how the patients had first to be won over to exert themselves, as the majority of them felt exceedingly ill-used when asked to do manual work. They were converted by friendly homilies explaining the object in view, and they soon found ample justification for the system in increase of appetite—an increase so marked that "Sister Jenny," of the commissariat department, found herself entirely out in her reckoning, and hastened to supplement the daily rations very liberally. Fruit growing and bean and asparagus cultivation are the main undertakings and the wholesale preparation of dried vegetables is in contemplation. But by far the most delightful feature of the work programme is the bee-keeping, which is conducted on a large and scientific scale, and which has awakened a lively interest among the "cure-workers." A large "bee-house" has been erected, which can accommodate thirty swarms, and a bee-master makes the busy dwellers in this palace the subject of delightful "Nature-study" talks. The honey is an important item in the dietary of the sanatorium inmates, the surplus meeting with a ready sale. The erection of hot-houses also gives employment to the more vigorous convalescents. There are altogether ninety-seven Heilstätten in Germany, providing close upon 10,000 beds. In addition to these, there are thirty-four private sanatoria. The number of tuberculosis dispensaries is steadily increasing. The Report gives a tabulated list of them, there being 858 in the German Empire, including the 537 care-stations in the Grand Duchy of Baden, which combine tuberculosis with other objects to which they devote attention. Professor Nietner deplotes the continued

prejudice of the medical profession in general against dispensaries, in spite of the fact that the dispensaries are most punctilious in avoiding anything that could be regarded as treatment. On the contrary, they are often the means of inducing patients in the very early stages of the disease to seek medical advice. The Report concludes with a list of nearly three hundred social betterment societies (two-thirds of which are Prussian), which render valiant service in the combat against tuberculosis, a large number of them being mainly concerned in promoting the welfare of children.

EMILIA V. KANTHACK DE VOSS.

SCHOOLS AND SCHOLARS.

As a nation we may have been slow in taking up the subject of school hygiene, but if one may judge from the quantity and quality of the literature relating to it which is appearing and has already appeared, the taunt levelled at us by outsiders has decidedly had an effect in awakening us to our responsibilities. Amongst the books of quality that have recently been issued, that now under review is deserving of a high place.¹ Edited by one of the best known and most practised of medical editors, and numbering amongst its contributors some of the best known of school doctors, not only in this but in foreign countries as well, it could hardly be otherwise. Every aspect of the subject of inspection of schools and scholars is clearly and concisely dealt with, and that from a practical point of view. Indeed, the practical character of the book is one of its most outstanding features. Each writer tells how it is done, and, being practical, how he or she does it. There is—and this is important—an absence of the “high writing,” of the quotations from Spencer, and of tags from the classics, which were so marked a feature of the earlier works on school hygiene. There are no flourishes at all; the book deals with work, and does it in a workmanlike manner. This is, of course, not to be wondered at, the writers being in the main working Medical Officers. The editor in his preface insists upon the practical character of the book. He has aimed at providing a guide for School Medical Officers, and an authoritative exposition of the subject for educationalists. Admirably assisted by his contributors, he has succeeded, and both he and they are deserving of the utmost credit. The book is well planned. In a short, as always, pleasantly written introduction, Sir Lauder Brunton brings us to a consideration of the various aspects of the subject of medical examination. The writers are all people well known in the Public Health or School Medical world. A few names only need be mentioned: Dr. Hope, of Liverpool; Dr. Reid, of Staffordshire; Dr. Howarth, of Kent; Lieut.-Colonel Melville, of the Royal Army Medical College; Dr. Clement Dukes, of Rugby; Dr. Alice Corthorn, etc., represent

¹ “Medical Examination of Schools and Scholars.” Edited by T. N. Kelynack, M.D., Medical Adviser to the National Children’s Home and Orphanage; Hon. Physician to Mount Vernon Hospital for Consumption and Diseases of the Chest, etc. With an Introduction by Sir Lauder Brunton, Bart., M.D., LL.D., etc. Pp. xvi + 434. London: P. S. King and Son, 1910. Price 10s. 6d. net.

England. And Dr. Leslie Mackenzie, of the Local Government Board ; Dr. Lindsay, of Belfast ; and Dr. Lloyd Edwards, of Barry, represent Scotland, Ireland, and Wales respectively. Amongst the colonial contributors are Sir Philip Sidney Jones (Australia), and Dr. Malcolm Mason (New Zealand) ; the American representatives being Drs. Gulick and Tait Mackenzie. Articles showing how the work is carried out in European countries are contributed by well-known native school hygienists—French, German, Swedish, etc. The chapters provided by these writers cover practically the whole field of school medical work. Dr. Hope gives us succinctly all the arguments in favour of complete co-operation between the Medical Officer of Health and the School Medical Officer, and Drs. Reid and Priestly, in a chapter on examination of schools, suggest a scheme which should prove useful. The important subject of the organization and administration of the medical examination of scholars is ably and fully described by Dr. Howarth, and in it School Medical Officers will find information likely to prove of great value to them. Dr. Clement Dukes and others deal with the medical examination of children in schools other than those in the class of the ordinary elementary school—viz., preparatory and secondary, army, and industrial schools. Excellent chapters on the examination of special parts—*e.g.*, the eye, ear, teeth, and so on—are contributed by specialists. These are of the utmost importance, and will repay study. It would take up too much space to go through the work and refer to each chapter, but special mention may be made of that on "Feeding of the School Child," by Dr. Lambert ; on "Open-Air Schools," by the Sheffield School Medical Officer, Dr. R. P. Williams, who has had special opportunities of studying such institutions in that most go-ahead city ; and on the "School Nurse," by Dr. Forbes, of Brighton, whose views on the utility of such officers are deserving of consideration. The chapter on "School Clinics," naturally enough, comes from Bradford, and is written by Dr. Williams. The necessity for providing for the treatment of many of the children found defective at the medical examination is recognized practically by all School Medical Officers, and a perusal of Dr. Williams' contribution is strongly recommended. As we owe so much to the teaching of foreign countries in connection with school hygiene, a word may be said with regard to the chapters contributed from abroad. Although we have gone so far ahead, there still remains much to be done, and many hints are to be found in the articles descriptive of methods in vogue in countries other than our own. The writers of the articles wisely chose to adhere to their own language in preparing them, trusting to others to translate them into English. The work of translation, entrusted in the main to Mrs. de Voss and Mrs. Kelynack, has been admirably carried out. Dr. Kelynack's book is one which may be recommended with safety. School Medical Officers will find in it information likely to be of the greatest use to them, and educationalists a trustworthy statement as to how far matters in connection with the medical examination of schools and scholars have advanced.

CHARLES PORTER, M.D.

VACCINE THERAPY.

In previous numbers Dr. Allen's very complete study of vaccine therapy has been favourably noticed.¹ A work that rapidly reaches its third edition stands in but little need of a reviewer. In dealing with a new and fast advancing subject, much experience, judgment, discretion, and restraint, are necessary. These characteristics are manifest in the present volume. The author in a broad-minded manner, but in no way hiding his own convictions, explains present-day conceptions regarding the nature and source of opsonins, and indicates the best methods for determining the opsonic content of the blood. Details are given of the preparation of vaccines, and directions for the use of vaccines in combating infections due to invasion by the staphylococcus, streptococcus, pneumococcus, gonococcus, microbes of the colon, typhoid and dysenteric groups, and organisms originating in the infectious catarrhs of the respiratory tract and its annexes. The most interesting section of the volume to readers of this journal will be that devoted to infections by the *Bacillus tuberculosis* group. Dr. Allen admits that "progress in the vaccine treatment of tuberculous infections of the lung has been disappointingly slow," but he explains why this has been so. He recognizes that "aberration of mind" is answerable for no little of the prejudice that prevails. "Some, indeed, there are who have so far strayed from the rational path as to advocate the combat of an infection by the human strain, and *vice versa*." Moreover, many are slow to understand that "many of the symptoms formerly ascribed to the tubercle bacillus are in reality due to secondary infections by other bacteria." Dr. Allen, we are glad to see, admits that much of our hesitation is due to "the incompleteness of our knowledge of the natural defensive mechanism of the body against infection and of the means whereby it is overcome, of the true nature of the tubercle bacillus, of its requirements for growth and of the toxins it forms." He wisely admits that "of the peculiar properties of the tissues, which enable some to resist infection, while others fall an easy prey, we know nothing." These quotations indicate the open-minded attitude of the author. His view regarding tuberculosis is that it is "almost certainly a biochemical problem, the constitutional defect being present in the embryo. Epiblastic and hypoblastic tissues seem more vulnerable than mesoblastic; and although in a given case more than one of these may be hypersusceptible, yet it would appear to be more or less the rule that, if infection begin in an epiblastic tissue, it is confined to epiblastic tissues, unless spread occur by contiguity." Dr. Allen deals with the different types of the tubercle bacillus, and details the methods of diagnosis of tuberculous infection and of the type of the organisms concerned. Particulars are also given of the varieties of tuberculin and their effects and suitability in different cases. The whole study is particularly valuable and highly suggestive, and deserves serious study. To the practical therapist the directions regarding treatment will be of much service. The book is certainly a notable one, and

¹ "Vaccine Therapy: Its Theory and Practice." By R. W. Allen, M.D., B.S. Third edition. Pp. x+277. London: H. K. Lewis. 1910. Price 7s. 6d. net.

Dr. Allen is to be congratulated on having furnished what is without doubt one of the most stimulating of works on a subject which for long is likely to remain imperfectly understood.

T. N. KELYNACK.

SELF-HELP FOR THE CONSUMPTIVE.

The consumptive must learn to help himself. It is only by loyal co-operation between the physician and the tuberculous patient that health may be won back and kept. Every medical adviser must have felt the need for some simple, direct, reasonable guide to what may be called a rational after-care, and which he might safely place in the hands of a tuberculous subject with the admonition to mark, learn, and inwardly digest, its contents. Dr. Noel Bardswell has supplied such a manual.¹ As Dr. Theodore Williams wisely indicates in his foreword, "the after-care of the consumptive on leaving the sanatorium is of the highest importance, for on this his future health and prosperity may depend." This handbook is based on a series of short lectures delivered by the author to the patients of King Edward VII. Sanatorium. It consists of clearly-expressed facts regarding the nature of consumption and the rationale of sanatorium treatment, expositions on fresh air, food, rest, exercise and recreations, and numerous valuable hints on making the best of the hygienic powers and Nature's forces making for the regainment and maintenance of health. The chapter on "Emigration for Consumptives" might with advantage be studied by doctors as well as patients, for Dr. Bardswell does not hesitate to state the case as it needs to be known. The work has been well conceived, and throughout it has been admirably executed.

OPEN-AIR SCHOOLS.

Open-air schools have come to stay. They have not only accomplished much for the children who have been able to attend them, but are revolutionizing ideas regarding the structural arrangements of schools, and are providing an impetus to outdoor natural methods of instruction. Dr. Ayres has been well advised to focus in one attractively-written volume our present knowledge regarding the essentials of the open-air school.² His book should be in the hands of all members of educational bodies, school doctors, and teachers. After briefly explaining the origin and development of the open-air school, he details its prominent features as seen in Germany, England, and the United States, discusses results, indicates cost, and, in short, supplies just the information and direction which is needed to guide progress along rational lines. A valuable feature of the volume is the excellent bibliography. Even without being freely read, the book tells its story plainly, for the illustrations are many and all are excellent.

¹ "Advice to Consumptives: Home Treatment, After-Care and Prevention." By Noel Dean Bardswell, M.D., Medical Superintendent, King Edward VII. Sanatorium. Foreword by C. Theodore Williams, M.V.O., M.D., F.R.C.P. Pp. xv + 144. London: Adam and Charles Black. 1910. Price 1s. 6d. net.

² "Open-Air Schools." By Leonard P. Ayres, Ph.D., Associate Director, Department of Child Hygiene, Russell Sage Foundation. Pp. xvii + 171. With numerous illustrations and charts. New York: Doubleday, Page and Company. 1910. Price \$1.20 net.

GARDEN DWELLINGS.

Every student of tuberculosis must welcome the development of public and professional opinion which favours and makes possible such practical measures as are being made manifest in connection with the town planning movement and the establishment of garden cities. It is folly to foretell the extinction of consumption so long as insanitary habitations and non-hygienic towns exercise their baneful influences on our citizens. The remarkable output of works dealing with Nature-study, gardening, building reform, and domestic and civic hygiene, is a sign of the coming reformation. One of the most interesting of modern volumes is the really beautiful volume recently published by Mr. T. Fisher Unwin at a price which brings it within the reach of all.¹ The volume deals with the Garden Suburb Schemes at Hampstead, Romford, Esher Park, and Nast Hyde, Hatfield. There are also valuable articles on modern houses which should be of great assistance to every householder and home-lover. The chapter on the Town Planning Act is informing, and will further the progress of the movement. The illustrations are delightful.

WORKS OF REFERENCE.

"The Extra Pharmacopœia of Martindale and Westcott" is to all intents and purposes a national institution.² A work in its fourteenth edition must be considered beyond the reach of reviewers. This volume is an indispensable one for all medical practitioners and pharmacists desirous of being abreast of the times. The present issue has been improved in shape, and yet maintains all the familiar excellencies of paper, arrangement, and, best of all, substance. The book is not only a perfect vade-mecum to official preparations, but contains a marvellous amount of information regarding new preparations and procedures, tests, and, indeed, all matters in which physician and pharmacist may be expected to co-operate. There are valuable summaries on lactic acid bacilli therapy, organic arsenic compounds, iontophoresis, the use of radium, vaccine therapy, and the like. Special reference must be made to the section on tuberculosis and the employment of tuberculins. Regarding the latter, just the essential information wanted by the busy practitioner is provided. The various forms of tuberculin are described, and their use for diagnosis and treatment succinctly explained. Details are given regarding opsonins and the normal tuberculo-opsonic index. The numerous references to recent work on opsonic index determination, the ophthalmic reaction, and Von Pirquet's cutaneous tuberculin vaccination, will be of much service to practical workers. The whole work is a monument to systematized, painstaking industry, and should be within the reach

¹ "Garden Suburbs, Town Planning, and Modern Architecture." With contributions by M. H. Baillie Scott, "Home Counties," Professor S. D. Adshead, P. W. Wilson, E. G. Culpin, and Alderman Thompson. Pp. xxiv + 132. With 110 drawings, plans, and photographs. London: T. Fisher Unwin. 1910. Price 1s. net.

² "The Extra Pharmacopœia of Martindale and Westcott." Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Fourteenth edition. Pp. xxvii + 1054. London: H. K. Lewis, 136, Gower Street, W.C. 1910. Price 12s. net.

of every doctor and dispenser. A supplementary volume provides a useful chart for the recognition of organic chemical bodies used in therapeutics.¹

Photography adds much to the delights of the outdoor life. For many sanatorium patients it provides just the artistic pursuit needed to prevent morbid introspection, and it certainly affords endless interest to neighbours and friends. With modern appliances the black art has been robbed of all its discomforts, and even the dark-room can be dispensed with. To all lovers of the camera the new "Photographic Annual," edited by Mr. E. J. Wall, may be recommended.² The volume contains lengthy articles on screen plate colour photography and stereoscopic work. There are useful notes on development, with figures, facts and formulae, for the practical photographer. A special feature of the volume is the excellent glossary.

In previous numbers we have favourably noticed the popular garden books edited by Mr. E. O. Greening. To his excellent series there have now been added two new additions, one on "Garden Allotments," and the other on "Cropping Garden Allotments."³ These cheap booklets should be widely circulated among rural residents. The movement to provide allotments for the working class deserves support from all striving for the betterment of the people.

Mr. Walter Hill's bulky annual on Holiday Resorts should be known by all medical practitioners and those who have to advise regarding the selection of a health or holiday centre, or make provision for the same. The volume contains many excellent illustrations and several good maps. The title of the volume indicates its wide scope.⁴

Students of tuberculosis in early life will be well advised to procure a copy of the striking address delivered by the President of the Royal College of Physicians at the opening of the new Sanatorium at Harpenden for Children threatened with Consumption.⁵

¹ "Organic Analysis Chart." By W. Harrison Martindale, Ph.D. A Supplement to the Extra Pharmacopœia. Fourteenth edition. Pp. 80. London: H. K. Lewis, 1910. Price 3s. 6d. net.

² "The Photographic Annual for 1910-11," incorporating the figures, facts, and formulae, of photography. A guide to them for actual use. Edited by E. J. Wall, F.R.P.S. Sixth edition. Pp. 287. London: Dawbarn and Ward, Ltd. 1910. Price 2s. net cloth, 1s. net paper.

³ The "One and All" Garden Books. Edited by Edward Owen Greening, F.R.H.S. No. 27, "Garden Allotments." No. 28, "Cropping Allotments." Both by J. Wright, V.M.H., F.R.H.S. London: Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C. 1910. Price 1d. each.

⁴ "Where to Stay and What to See." A collection of lists of seaside, farmhouse, country lodgings, hotels and boarding-houses, etc., in the districts served by the Midland, London and North-Western, Great Northern, Great Eastern, Great Western, and Great Central Railway Companies; together with useful and interesting information for the artist, antiquary, angler, tourist, and holiday-maker. Published by Walter Hill, 67 and 69, Southampton Row, London, W.C. 1910. Price 1s.

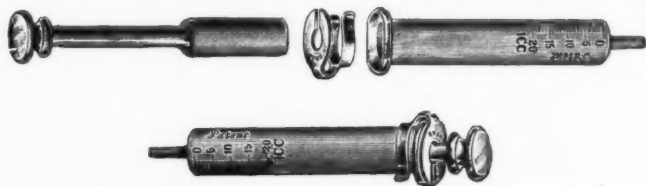
⁵ "The Treatment of Children Threatened with Consumption. An Address delivered at the Opening of the Children's Sanatorium, Harpenden," by Sir Thomas Barlow, Bart., K.C.V.O., M.D., F.R.S., etc. London: National Children's Home and Orphanage, Bonner Road, London, N.E.

PREPARATIONS AND APPLIANCES.

TUBERCULINS.

TUBERCULIN is increasing in favour both as a diagnostic and therapeutic agent. Knowledge regarding the nature and influence of tuberculin has advanced. Methods of precision are now employed in the preparation of the various tuberculins, and tuberculins are available in convenient forms for clinical use. The excessive doses of former days are being replaced by a carefully graduated system. Under the new regimen the usefulness of tuberculin is being widely extended. Busy practitioners desirous of obtaining a concise summary of our present knowledge should consult the up-to-date article in the new edition of "The Extra Pharmacopœia."¹ Much of the growing popularity of tuberculin is due to the enterprise of leading firms in providing reliable preparations in convenient and readily available forms. We have recently had opportunities of employing a number of these, and believe the following notes will be of service in guiding medical practitioners in the selections of trustworthy brands.

Messrs. Allen and Hanbury have issued a useful booklet² giving a well-arranged summary of the characteristics and methods of employment of the various tuberculins, and providing a serviceable table of graduated doses for the guidance of practitioners using tuberculin in their practice. This firm supplies tuberculin in various doses, put up



ASEPTIC ALL-GLASS SYRINGE FOR TUBERCULIN INJECTIONS.

in sealed Jena-glass sterile capsules, which they term "Azoules," so providing an easily employed means for administering tuberculin to any case with the minimum of trouble. The aseptic all-glass hypodermic syringe supplied by Messrs. Allen and Hanbury, and here illustrated,³ is admirably adapted for the administration of tuberculin.

¹ "The Extra Pharmacopœia of Martindale and Westcott." Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Fourteenth edition. London: H. K. Lewis. 1910. Price 12s. net.

² "The Tuberculins and their Uses as Diagnostic and Curative Agents." London: Allen and Hanbury, Ltd., 7, Vere Street, W. 1910. Supplied to medical practitioners on application. [Telephone: 628 Paddington.]

³ The Aseptic All-Glass Hypodermic Syringe is supplied by Messrs. Allen and Hanbury, Ltd., 7, Vere Street, W., at from 6s. to 11s. each, complete in metal case.

We have used it with the greatest satisfaction. The barrel and piston are made entirely of glass, the piston being ground to fit the barrel without the intervention of any washer. The parts are readily detached, and can be easily sterilized. It is worth noting that the syringe is of such a length that the working piston is not exposed to contamination by touch when filling the syringe. Messrs. Allen and Hanbury have also favoured us with their tuberculin for the conduct of Von Pirquet's Cutaneous Diagnostic Reaction. The tuberculin, human or bovine, is supplied in tubes, with ejector ready for use. In employing this diagnostic means, the specially designed "vaccinating perforator" should always be employed. The perforating raspator of Von Pirquet has a metal handle and a platinum-iridium blade, with an obtuse-angled end, can be readily sterilized, and its employment causes no pain, and greatly facilitates the carrying out of the test.¹

Messrs. Burroughs, Wellcome and Co. also provide a thoroughly reliable and standardized series of tuberculins. These are prepared at the Wellcome Physiological Research Laboratories, Brockwell Hall, Herne Hill, London.² The tuberculin is supplied in closed phials, each containing sufficient to enable the practitioner to draw up into his hypodermic syringe the dose required. Tuberculins are also provided both for diagnostic and therapeutic purposes, as well as for laboratory tests. The phials for use in employing the Von Pirquet reaction are excellent. Recently this enterprising firm has arranged for the supply of tuberculin in a convenient "tabloid" form, consisting of dried bacillary substance. This can be administered hypodermically, or, if thought fit, may be given by the mouth.

Messrs. Duncan, Flockhart and Co. have issued a booklet which will be helpful to practitioners.³ It gives directions regarding the technique of inoculation, and particulars regarding the employment of tuberculin. The preparations supplied by this firm we have found to be most satisfactory. They include a sterilized dilution of glycerine-free old tuberculin in glass capsules for Calmette's test, and a special sterile dilution of Koch's original tuberculin for the Von Pirquet cuti-reaction. For Moro's test, or the so-called percutaneous reaction, a sterilized ointment containing 50 per cent. of Koch's old tuberculin is sent out in a flexible gelatine capsule, with ejector nozzle and glass spatula for spreading the ointment.

W. Martindale also makes a feature of tuberculin preparations.⁴ This firm provides tuberculin in most convenient "Sterules," freshly prepared and ready for use. Tuberculins for diagnostic purposes are also available in suitable form to meet the convenience of practitioners requiring reliable and easily applied preparations.

¹ The Vaccinating Perforator for Von Pirquet's surface vaccination is supplied by Messrs. Allen and Hanbury at 7s. 6d. each. The tuberculin (human or bovine) is supplied ready for use at 1s. per tube.

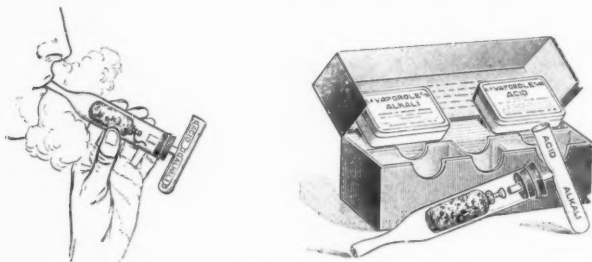
² Full particulars regarding the "Wellcome" Brand Tuberculins may be obtained on application to Messrs. Burroughs, Wellcome and Co., Snow Hill Buildings, London, E.C. [Telephone: 13300 Central.]

³ "Notes on Vaccine Therapy and Tuberculin Treatment and Diagnosis." This will be supplied to medical practitioners on application to Messrs. Duncan, Flockhart and Co., 104-108, South Canongate, Edinburgh.

⁴ Particulars may be obtained on application to W. Martindale, 10, New Cavendish Street, London, W. [Telephone: 4688 Gerrard.] Reference should also be made to "The Extra Pharmacopœia of Martindale and Westcott."

AMMONIUM CHLORIDE INHALERS.

The vapour of ammonium chloride, freshly prepared, is often of assistance in dealing with catarrhal affections of the nose, throat, and Eustachian tube. Among tuberculous subjects the mucous membrane in these regions is commonly the seat of chronic inflammatory and other lesions, and the employment of such a local agent as pure ammonium chloride in a state of vapour is frequently of benefit. The vapour is produced by drawing air through hydrochloric acid and ammonia in a suitable apparatus, and purifying the same by



AMMONIUM CHLORIDE INHALER.

passage through water or a moist sponge. Messrs. Burroughs, Wellcome and Co. have designed a most ingenious, compact, clean, simple, portable, and effective "VAPOROLE" AMMONIUM CHLORIDE INHALER, which, after careful testing, we can thoroughly recommend.¹ The chief features of this efficient contrivance are shown in the accompanying figure. Supplies of acid and alkali sufficient for each application are provided in hermetically-sealed "Vaporole" capsules, which can be carried anywhere and are instantly available. This little appliance does away with all the clumsy and cumbersome inhalers where rubber tubes go wrong and the bottles of alkali and acid get spilt. It is supplied in a neat case, suitable for travelling, and complete with well-protected "Vaporoles" in metal boxes. This inhaler only needs to be used to be approved.

Another ingenious form of chloride of ammonium inhaler has been introduced by Messrs. Philip Harris and Co., Ltd.² Its method of construction and manner of use is shown in the accompanying illustrations. In the "HARRIS" AMMONIUM CHLORIDE INHALER, the neutrality of the product is ensured by its passage through water, which absorbs any excess of acid or ammonia; and in addition to this, a considerable quantity of vapour is obtained with minimum

¹ The "Vaporole" Ammonium Chloride Inhaler is supplied by Messrs. Burroughs, Wellcome and Co., of Snow Hill Buildings, London, E.C., from whom all particulars may be obtained.

² The "Harris" Ammonium Chloride Inhaler is supplied by Messrs. Philip Harris and Co., Ltd., Edmund Street, Birmingham, at 3s. 6d. each. The charges of chloride and ammonia may be procured in capsules at 1s. 6d. per doz.

effort on the part of the patient. The directions for use are simple. One end of a white capsule containing ammonia is broken and introduced into an aperture. The other end is then broken off, when the ammonia flows out. The brown capsule (hydrochloric acid) is



CHLORIDE OF AMMONIUM INHALER.

treated in the same manner, but introduced into another aperture, which is then securely corked. A third aperture is half filled with water, and, if desired, a few drops of inhaling oil such as eucalyptus or creosote, may be added, and cork.

AN HYGIENIC BED AND DOUCHE PAN.

For bed-fast tuberculous and other patients a reliable sanitary bed-pan is indispensable. Of the many forms available, the best we have seen is the "PERFECTION" BED-PAN.¹ It is anatomically correct in form, and admirably fits the body, causing no discomfort from pressure. The weight of the body rests on the sides of the pan, so obviating pressure on the spine. The pan is of large capacity, and can be used as a douche-pan. It is a thoroughly sanitary contrivance, is highly glazed and non-porous, can be readily cleaned and rendered aseptic, and is easily emptied. It certainly merits its name.

¹ The patents under which the "Perfection" bed and douche pan is manufactured are owned and controlled by Meinecke and Co., 48 and 50, Park Place, in the City of New York. Grimwades, Ltd., at Stoke-on-Trent, in this country, have the exclusive rights of manufacture, and orders should be addressed direct to Grimwades, Ltd., Potteries at Stoke-on-Trent, England. The retail prices are 8s. 6d. and 6s. 6d. for large and small sizes respectively.

A DUST AND VENTILATION SCREEN.

The open-air life is not altogether without disadvantages. Dust, mosquitoes, and other flies and wasps, often trouble the enthusiast for fresh air. Messrs. Smith, Fletcher and Co., of Edinburgh, have invented an ingenious DUST AND VENTILATION SCREEN, which should meet many of the difficulties suggested.¹ For invalids and patients confined to the sick-room, or bed-fast, this screen should be of much service. It has been used, we understand, in hospitals with advantage. The screen with which we have experimented is certainly a useful contrivance, which we would commend to the notice of medical advisers. Its chief features are shown in the accompanying illustration. It consists of a fine mesh of galvanized wire gauze, with galvanized metal-bound frames, which, arranged in telescopic form, allow for ready adaptation to either the top or bottom of windows of varying size. The screens are made in three stock sizes, but special sizes can be supplied to order. It is well known that



A NEW WINDOW SCREEN.

wire-wove, or other metal screens of fine mesh, seem to break the force of the wind, and we are inclined to believe that screens similar to the above, made larger and stronger, might be of service as protectors from wind. Such would be a boon to many lung cases. The experiment is at least worth trying.

A NEW SPUTUM FLASK.

Under the designation of "THE FARRINGTON" OVAL POCKET SALIVA BOTTLE, a new form of sputum flask has recently been introduced.² It consists of a dark-blue glass flask fitted with an earthenware receiver or funnel, having a groove beneath the shoulder, into which fits an indiarubber ring, thus making a tight joint. The screw-cap is of aluminium, with a rubber wad on the inside of the top. The flask is neat in appearance, convenient in size, easy to empty and clean, effective in use, and inexpensive, and should be popular in hospital, sanatorium, and dispensary practice, as well as for private patients requiring a cheap and yet hygienic sputum receptacle.

A NOVEL LAWN AND GARDEN SPRINKLER.

Most sanatoria and many hospitals, as well as large numbers of private habitations, are provided with valuable inducements to the open-air life in the form of lawns and gardens. For the proper care

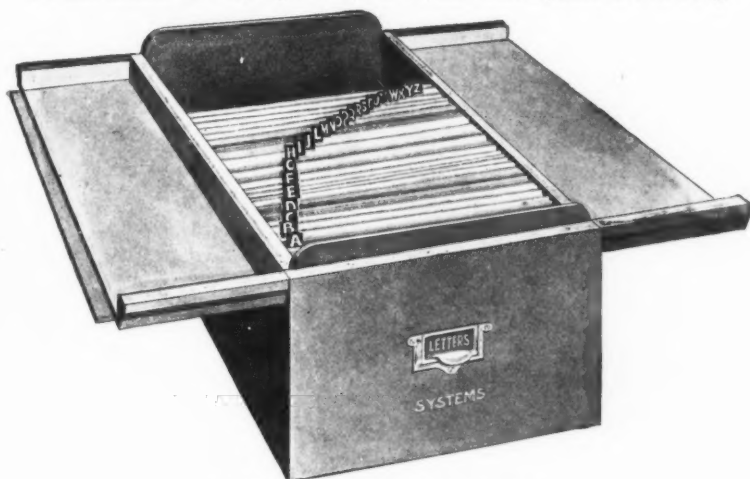
¹ The Dust and Ventilation Screen is manufactured by Messrs. Smith, Fletcher and Co., 172, High Street, Edinburgh, in sizes to fit windows of from 24 inches to 48 inches in width, at prices from 4s. 6d. to 5s. each.

² It is supplied by Messrs. Johnsen and Jørgensen, Ltd., 26 and 27, Farringdon Street, London, E.C.

of such some ready means of providing for watering in hot weather is necessary. In the DEWDROP SPRINKLER a simple, cheap, effective appliance is available.¹ By means of an adjustable nut, either a fine or large spray can be obtained, giving a fountain effect, or supplying a widespread lawn spray. The sprinkler is of strong construction, and there are no loose or revolving parts to get out of order.

THE CARE OF CASE-PAPERS.

The old-fashioned method of keeping notes in case-books has been quite superseded by the Vertical Filing System. No one experiencing the advantages of the latter would care to revert to the discomforts and limitations of the former. For those desirous of having a convenient means of keeping notes, charts, and correspondence relating



A DESK CABINET VERTICAL FILE.

to cases in a readily accessible and orderly manner, we want to recommend the inexpensive but highly effective DESK CABINET² illustrated in the accompanying figure. It will prove invaluable to medical practitioners, and may be used with advantage in hospital and sanatorium practice.

A NUTRIENT FOR TUBERCULOUS CASES.

Under the title of "JECOVOL," a highly palatable, readily digestible, and very nutritive preparation has been introduced for consumptives and other subjects of wasting disease.³ "Jecovol" contains 50 per

¹ Supplied by Messrs. Jones and Attwood, Ltd., of Stourbridge. Price, complete with pedestal and hose attachment, 5s.

² The Desk Cabinet Vertical File, as illustrated above, is supplied by Systems Limited, 9, Red Lion Passage, Holborn, London, W.C. Price 10s. 6d.

³ "Jecovol" is prepared by Messrs. James Woolley, Sons and Co., Ltd., Manufacturing Pharmaceutical Chemists, of Victoria Bridge, Manchester.

cent. of the finest Norwegian cod-liver oil, carefully emulsified with fresh yolk of egg. In each fluid ounce there are 6 grains of the glycerophosphates of calcium, sodium, and iron. The title "Jecovol" is protected as a trade-mark, so that there should be no fear of substitution when prescribed to be dispensed by pharmacists. Such a preparation will be welcomed by children and delicate patients. For those who cannot take the ordinary forms of cod-liver oil, it will prove an effective substitute. We believe this elegant emulsion will be of real value in the treatment of many cases of tuberculosis.

NOTES.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

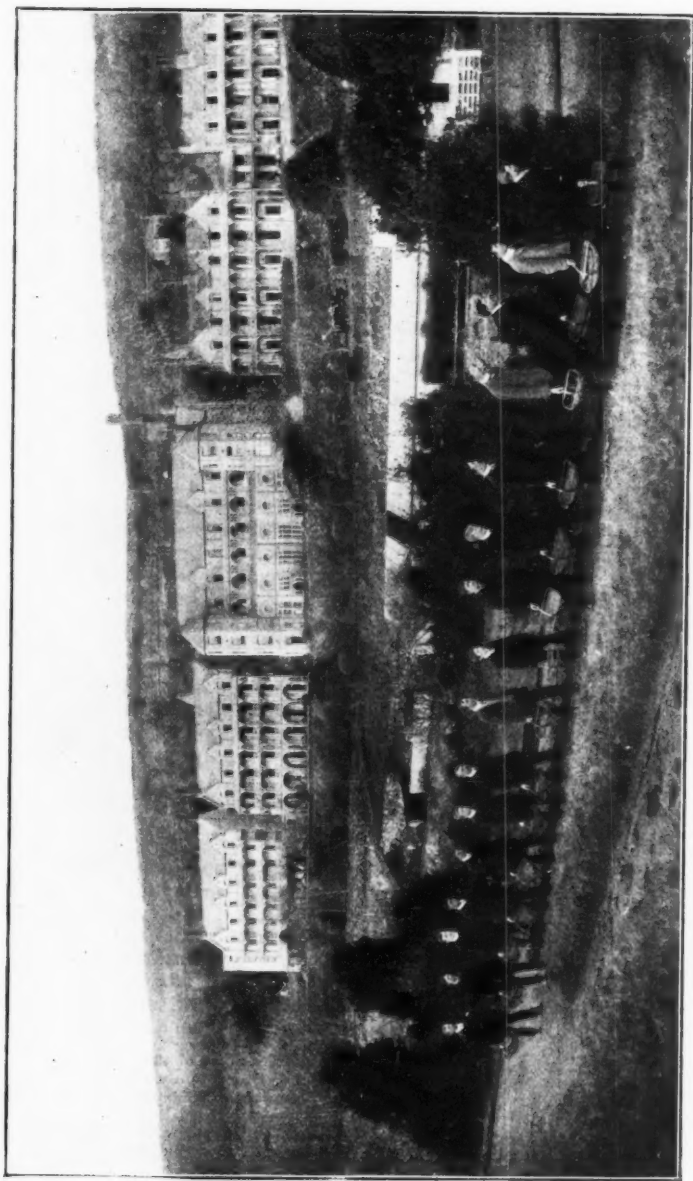
THE Special Appeal Committee of the National Association for the Prevention of Consumption is endeavouring to provide £5,000 a year for a general educational campaign. In order to instruct the nation, the following agencies are to be secured: (1) Travelling tuberculosis exhibitions; (2) caravans with equipment for the delivery of lantern lectures; (3) popular lectures; (4) an information bureau for the press and the public; (5) distribution of suitable literature. The work is to be purely educational, and no grants are to be made to institutions for treatment. The appeal is thoroughly practical and business-like: "Nothing can be done without money—£500 will fit out an exhibition; £600 will run such an exhibition for a year; £300 will fit out a caravan exhibition; £700 will run it for a year; £5 will pay for a lecture; £1 will pay for a set of lantern slides; one penny will pay for educational leaflets." Such a progressive policy deserves the most generous support. The President of the Local Government Board has written: "There can be no greater contribution to the national health and efficiency than a vigorous and determined effort to diminish the enormous waste of human life and the other evils attendant on that scourge of the workers, consumption; and I hope that all classes will assist in providing the necessary funds for carrying the crusade to a successful issue." All will unite with Mr. John Burns in this desire, and we may trust that many will, like him, labour indefatigably for the extermination of this great scourge of man and beast.¹

GRADUATED MANUAL LABOUR IN THE RESTORATION OF CONSUMPTIVES.

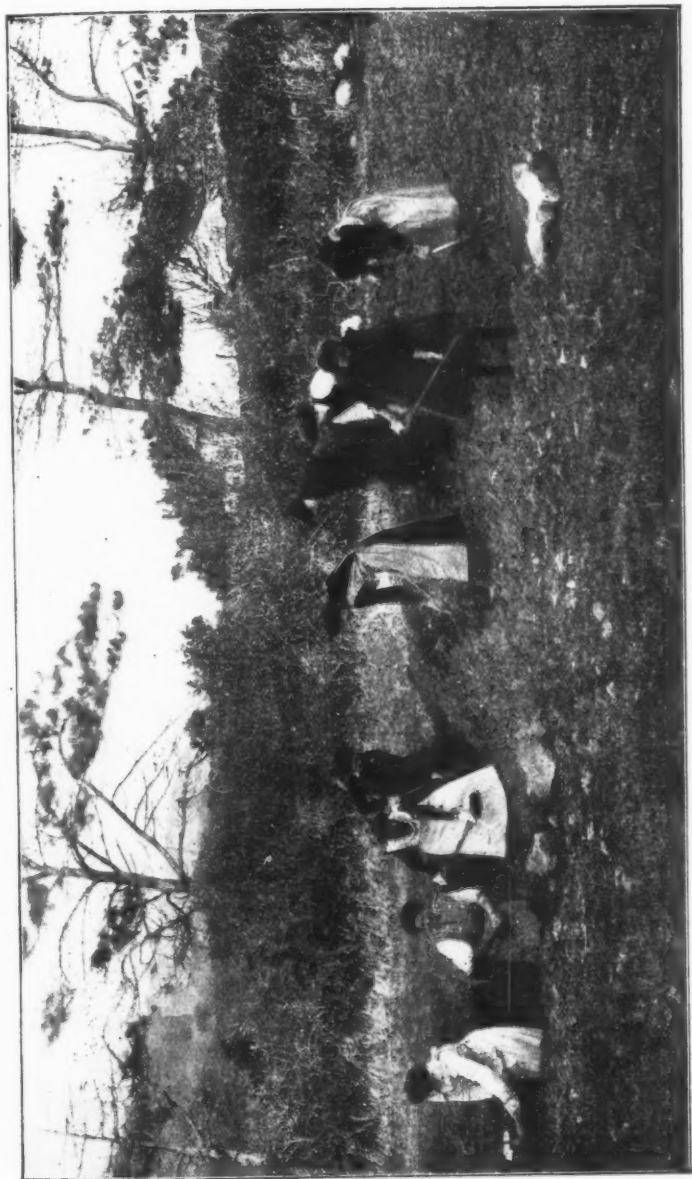
Every well-constituted and scientifically-managed sanatorium is now expected to provide for its patients systematic exercises and carefully graded labour under expert medical supervision. The benefits accruing to mind and body are by no means imaginary ones. In the recently-issued medical report of the Royal National Hospital, which is exceptionally well illustrated, full details are given of the methods adopted in prescribing and conducting work, and should be studied by all engaged in the practical management of sanatoria.²

¹ Contributions should be sent to the Honorary Treasurer of the Special Appeal Committee of the National Association for the Prevention of Consumption, 20, Hanover Square, London, W., and the Hon. Secretary will be pleased to furnish full particulars.

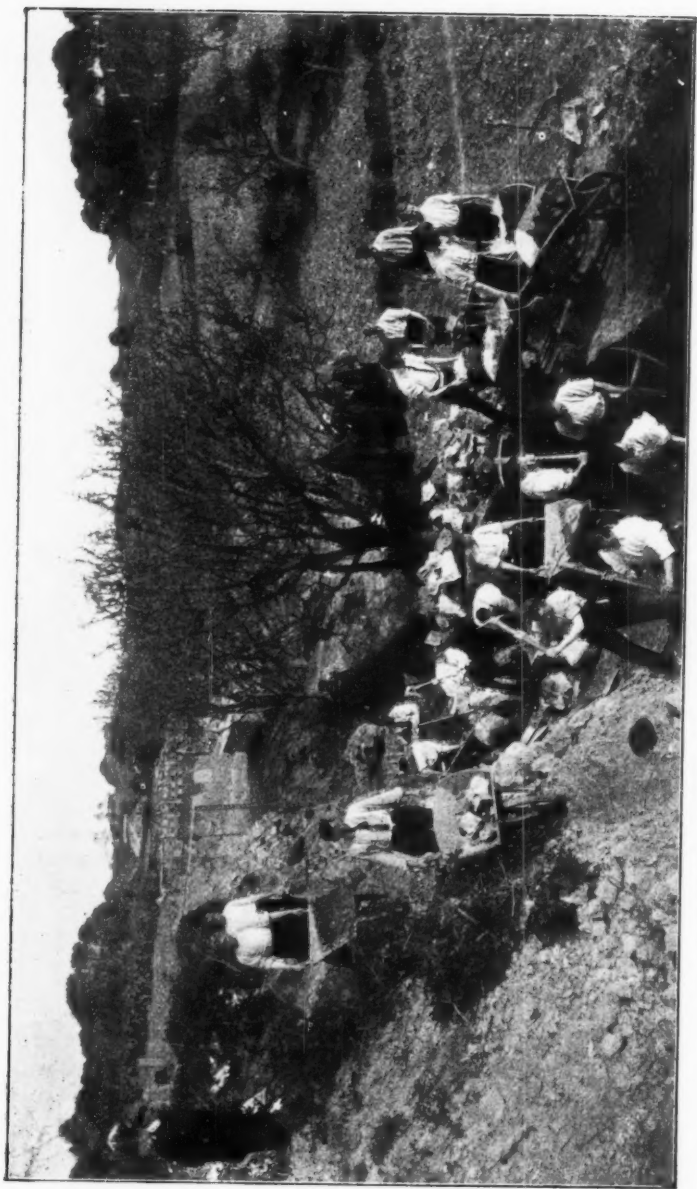
² "Medical Report for the Years 1905 to 1908 of the Royal National Hospital for Consumption and Diseases of the Chest on the Separate Principle, Ventnor, Isle of Wight." London: Secretary's Office, 18, Buckingham Street, Strand, W.C. 1910. Price 1s.



MEN PATIENTS CARRYING BASKETS WEIGHING FROM TWELVE TO TWENTY-FOUR POUNDS.
A portion of the Royal National Hospital, Ventnor, is seen in the background.



WOMEN PATIENTS ON THIRD AND FOURTH GRADE WORK: SHOVELLING AND PICKING.



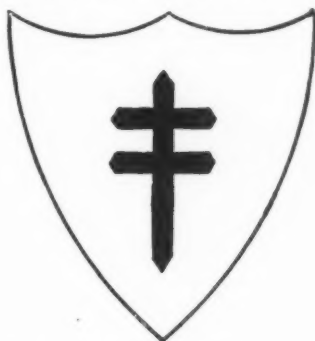
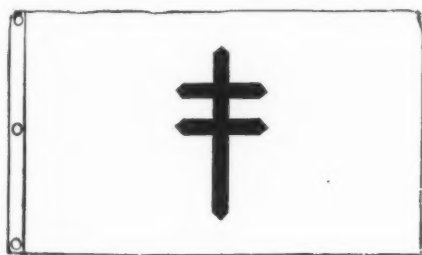
MEN PATIENTS ON FOURTH AND FIFTH GRADE WORK IN THE QUARRY.

Through the courtesy of the Committee we are enabled to reproduce three of the plates, which admirably indicate some of the procedures adopted. These illustrations tell their own story, and point a lesson which many will do well to understand.

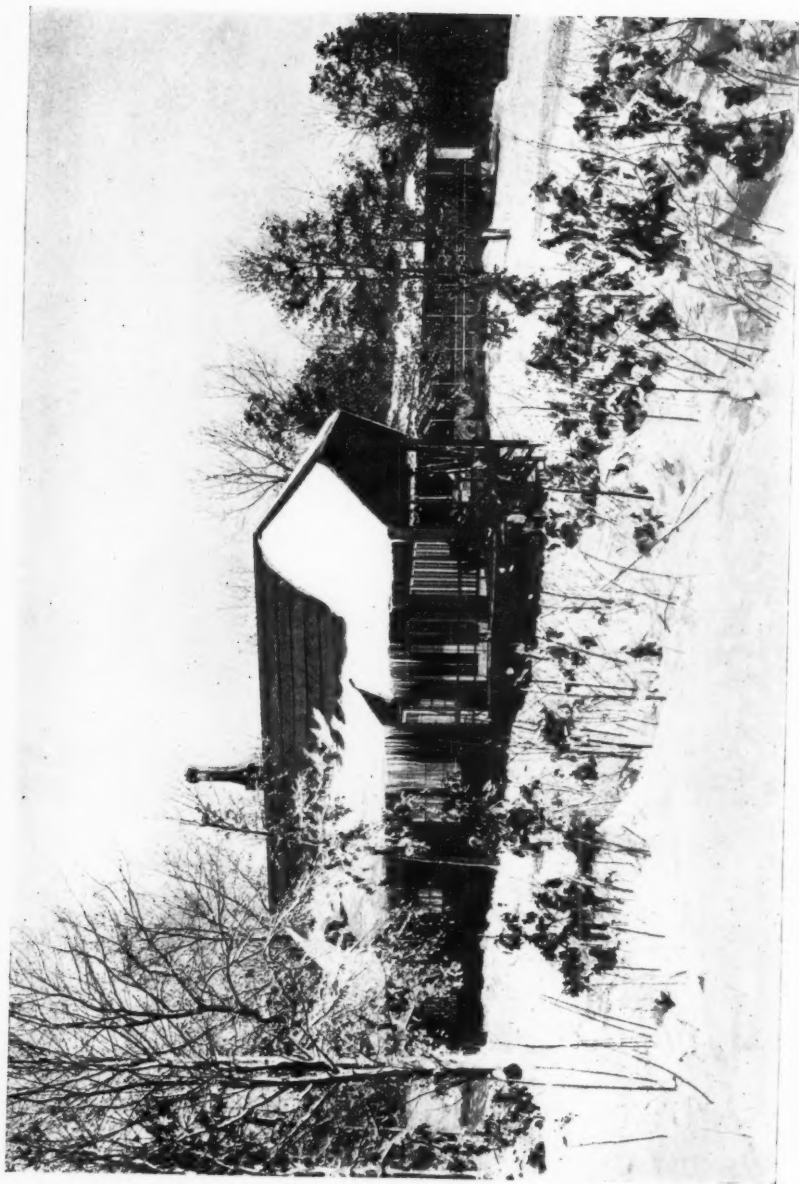
WINTER CAMPING FOR TUBERCULOSIS.

In this and other Northern lands, winter drives the majority of people to discard and discountenance open-air methods of living, and resort to a non-hygienic indoor existence. For the tuberculous, fresh air is essential in all weathers. The consumptive, even in the most inclement weather, and under simple conditions as regards habitation, may still continue his cure. To emphasize this imperfectly understood truth, we have reproduced, through the kindness of the Committee of the Boston Association for the Relief and Control of Tuberculosis, a striking illustration taken from their last report of the Prendergast Camp in winter. This is an open-air lodging and boarding place for "arrested" sanatorium patients. The equipment consists of a simple administration building with dining-room, kitchen, toilet-rooms, and living quarters for the staff, and a modified "Loomis lean-to" accommodating twelve men. The lean-to is unheated, and is entirely open along the side of its southern exposure. With protection from winds by the surrounding forest, it offers an excellent opportunity for outdoor sleeping. Good plain food is supplied in ample quantity. Four dollars (\$4) a week is charged for board and lodging. Such a camp might with advantage be started in many places, and with a minimum of expenditure might be expected to consolidate the cure of many a patient who now, after the short-time service of sanatorium residence, returns to the prejudicial, non-hygienic life and conditions under which he previously broke down.

ANTI-TUBERCULOSIS MOTTOES, FLAGS, AND SHIELDS.

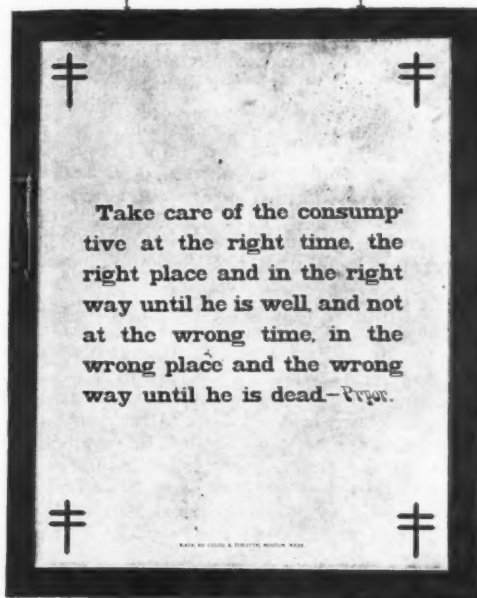


The Anti-Tuberculosis Campaign as conducted in the United States of America appears to lack neither men nor materials, and certainly the sinews of war are available to an extent that arouses virtuous envy in the old country. Real business capacity as well as enthusiasm



PRENDERCAST CAMP IN WINTER.

is being manifested by our cousins across the Atlantic in their combat with consumption. Business firms are co-operating in many and varied ways, and originality and practical common-sense combine to provide new weapons for the warfare. In anti-tuberculosis exhibitions



and meetings the popular imagination is caught, and the man in the street instructed by such simple devices as are illustrated in the accompanying figures of mottoes, flags, and shields.¹ Clearly, the old country will do well to keep its eyes on the unfettered and rapidly advancing West.

PATHS OF PROGRESS.

The Ninth International Tuberculosis Conference, under the high patronage of His Majesty King Albert, will be held in Brussels from October 5 to 8, 1910. The following are among the subjects which are to be discussed: Protection of Children from Tuberculosis; Tuberculosis and School Life; Women's Work in the Campaign against Tuberculosis. Commissions are to deal with sanatoria, milk-supply, solar radiation, international statistics, and an international system for registration regarding the state of the lungs. Reports are also to be presented dealing with the progress of the campaign in

¹ The decorative goods here illustrated are supplied by Messrs. Stone and Forsyth, of 67, Kingston Street, Boston, Mass., U.S.A., from whom full particulars may be obtained.

various countries. The Conference promises to be of much interest, and, meeting in Belgium's capital and exhibition city, a large gathering may be expected.¹

In all parts of the Empire men and women are considering ways and means whereby they may provide memorials worthy of King Edward the Seventh. Some important centres have already determined on the erection of sanatoria for tuberculous subjects. Consumptive sufferers certainly stand in need of more adequate provision, and for this class the late King had the deepest sympathy. It is to be hoped, however, that the importance of providing means for the education of the people in anti-tuberculosis methods of life will not be forgotten. A national bureau of information and instruction regarding tuberculosis is urgently needed, and in every important provincial centre there should be a bureau with a permanent exhibition in connection with it, available for all classes. Such measures would not only be of service to the afflicted, but would provide powers making for prevention, which, after all, is better than amelioration or arrest.

The power of the Press is being exercised on behalf of the Anti-Tuberculosis Movement. The Press Service of the American National Association for the Study and Prevention of Tuberculosis is accomplishing untold good.² It would be well if a like "service" could be available for the rational direction of journalists in this country.

We have recently received a "Special Sanatorium Number" of *The Modern Woodman*, the newspaper of The Modern Woodmen of America, the first of the great American life insurance institutions to realize that they have a duty to save lives as well as pay insurance losses. This number is an object-lesson as to how the average man may be reached and influenced, and secured as an enthusiastic promoter of hygienic righteousness. Amongst the illustrations there is one of an "emblematic sanatorium button adopted by the Executive Council, and presented free of all charge (in various grades) to the neighbours contributing to the sanatorium fund." Here is a suggestion which may be acceptable to many even in an old-fashioned country.

At last people seem to be realizing that the Anti-Tuberculosis Movement can make but little real progress so long as the children are left unprotected from tuberculous infection in the home and the school, and unprovided with proper treatment when affected. Greater attention is being paid to the early recognition of tendencies to tuberculosis in young subjects, and the diagnosis of tuberculous disease in its earliest stages. Sanatoria for delicate and tuberculous children are being established. The Education Committee of the Manchester City Council have been given a mansion and grounds for the purpose of providing a residential school for children in the early stages of consumption. Open-air schools are fully justifying their

¹ All inquiries relating to the Conference should be addressed to the Secretariat, Conférence Internationale contre la Tuberculose, Avenue Van Volxem, 253, Forest-Brussels, Belgium. The headquarters of the International Anti-Tuberculosis Association is at 137, Berlinerstrasse, Charlottenburg, Professor Dr. Pannwitz being the Secretary-General.

² Full particulars may be obtained on application to Dr. Livingston Farrand, the Executive Secretary, or Mr. Philip P. Jacobs, the Assistant Secretary of the National Association for the Study and Prevention of Tuberculosis, 105, East Twenty-second Street, New York City.

existence. Professor Ralph Williams has written a serviceable article on open-air schools, and provided a bibliography of the subject.¹ Messrs. P. S. King and Son have also just issued a helpful list of works dealing with open-air schools.² Dr. Leonard P. Ayres has written an informing article dealing with open-air schools more particularly from the American standpoint.³ Reference should also be made to a valuable contribution by Dr. Clive Riviere on Tuberculosis in Childhood.⁴ Students of childhood and all workers for child welfare will welcome the new journal, *The Child*, the first number of which has just appeared.⁵ The first number contains communications from the Bishop of Ripon, the Earl of Meath, the Right Hon. John Burns, M.P., Sir Lauder Brunton, Bart., M.D., Sir Edward Brabrook, C.B., V.P.S.A., Professor J. S. Mackenzie, Litt.D., Sir George Kekewich, K.C.B., Professor Patrick Geddes, Professor H. Griesbach, Dr. A. Mathieu, President G. Stanley Hall, LL.D., Professor J. A. Green, M.A., Professor Schuyten, Mrs. Kanthack de Voss, Dr. Theo Hyslop, Sir James Yoxall, M.A., M.P., Miss Temple Orme, LL.D., Rev. W. T. A. Barber, M.A., D.D., J. Lewis Paton, M.A., John Badley, M.A., Rev. Arthur E. Gregory, D.D., Dr. H. T. Ashby, Lee F. Hanmer, Montague Crackanthorpe, K.C., Dr. Bertram Thornton, and others. Such a list as this affords ample evidence of the authoritative character of the new journal. Leaders in all branches of child study in this and other lands are among the promised contributors. In order that *The Child* may fully serve all interests working for child betterment, the publishers have wisely arranged to issue with each number a directory of schools and other educational establishments; also lists giving the names of societies dealing with all forms of child welfare, and of hospitals, orphanages, and like institutions for children. Heads of schools and secretaries of hospitals for children and similar public institutions would do well to communicate at once with the publishers. Full particulars regarding this new Medico-Sociological journal may be obtained on application to Messrs. John Bale, Sons, and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, London, W.

¹ Williams, Ralph P.: "Open-Air Schools" in "Medical Examination of Schools and Scholars." Edited by Dr. T. N. Kelynack. With an Introduction by Sir Lauder Brunton. London: P. S. King and Son. 1910. Price 10s, 6d. net.

² Subject List of Some Publications in English compiled by the British Institute of Social Service, 4, Tavistock Square, London, W.C.: Open-Air Schools, No. 9, August, 1910. London: P. S. King and Son, Orchard House; 2 and 4, Great Smith Street, Westminster, S.W. Supplied free on application.

³ Ayres, L. P.: "Open-Air Schools." Pp. 14. New York City: Department of Child Hygiene, Russell Sage Foundation, 1, Madison Avenue.

⁴ Riviere, C.: "Tuberculosis in Childhood." Vol. II, National Health Manuals. Edited by Dr. T. N. Kelynack. London: Charles Kelly. 1910. Price 1s. net.

⁵ *The Child* is published monthly by Messrs. John Bale, Sons, and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, London, W. Annual subscription £1 1s. post free to all parts of the world.

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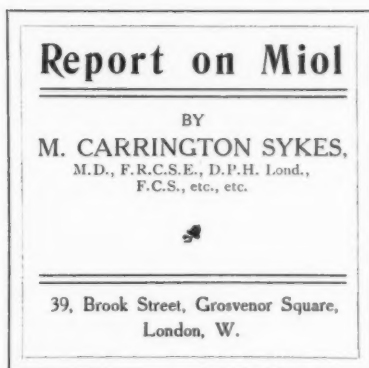
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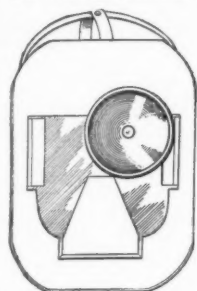
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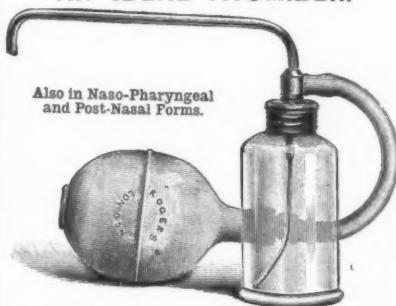
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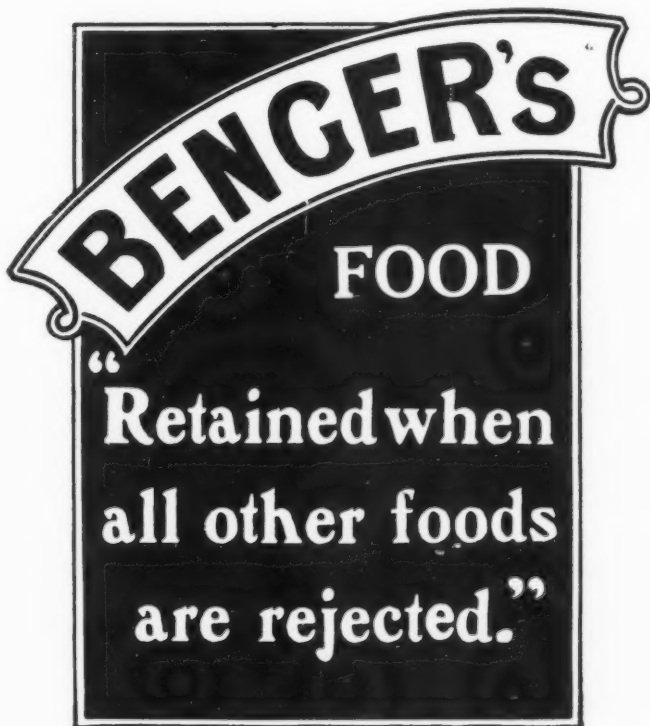
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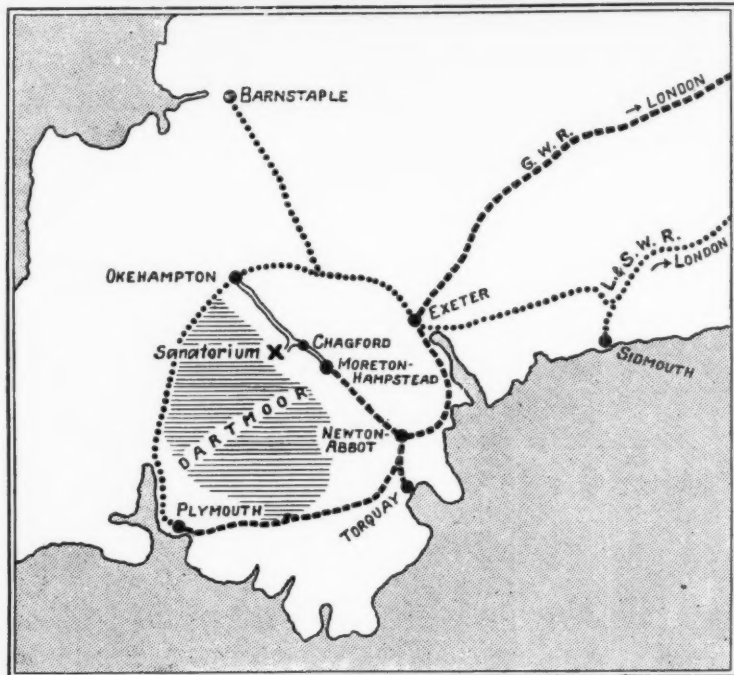
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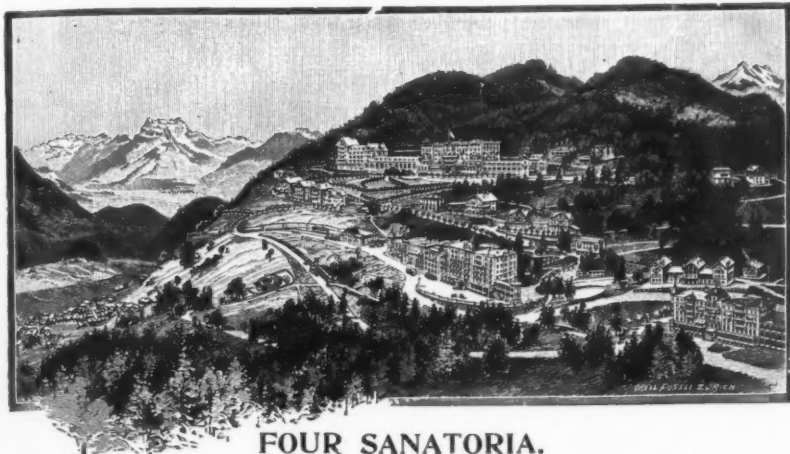
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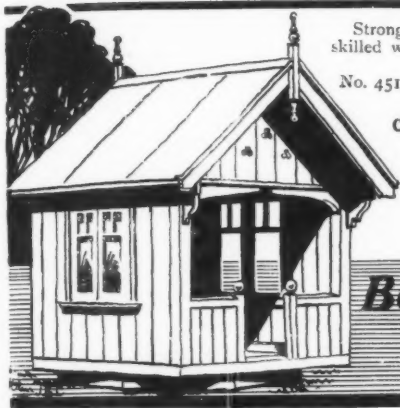
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